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Boynton's Hat Machinery.

The annexed engraving is a perspective view of a forming machine for making woolen hat bodies, invented by L. W. Boynton, of this city, and is now on exhibition in the Crystal Palace, where it will be in operation until it closes.

A large double cone, (not shown) for receiving the wool to form the hat bodies, is placed on and between the four cones, A A and B B. These four cones with their bearings, are supported on an oscillating head, the spindle of which is secured in a socket in the main standard of the machine passing down through the driving pulleys. At its shoulder where it enters the standard, a sleeve, C, is secured to it by a set screw. A small pinion is secured under the driving pulley on a collar, and as the said pinion is rotated it gives motion to the wheel, D. On one of the arms or spokes of this wheel there is a slot in which is inserted the pin axis of a bent arm, *d*, the other end of which has another axis pin inserted in the slot of a link, connected with the sleeve, C, of the spindle of the cones. This combination of devices gives a continuous vibratory motion to the cones from the rotary motion of the pinion and wheel, D, and at the same time they have a rotary motion also. It will be observed that as wheel D revolves, the arm, *d*, will turn on the pins of the two adjusting slots described, thus oscillating the spindle which supports the cones, and giving them a vibratory motion from side to side. This is for the purpose of taking on the sheet of wool on the top—double cone—correctly; the said cone having the greatest velocity at the middle, and the least at the ends. The sheet of wool is fed in on the double cone from the carding machine in a straight line, but the oscillating motion given to the cones makes the cone which receives the wool take it on in the proper manner, as it is continually revolved, as well as oscillated, to let the sheet be wrapped spirally around it—thickest at the middle, and thinnest at the crown, as is required to form hat bodies.

Rotary motion is given to the cones as follows:—A pinion, I, above the driving pulleys gives motion to a small bevel pinion which gears into bevel teeth set round the bottom of the off-cone, B, at the right hand; this cone has a spindle or axis at its apex working in a proper bearing, and has a small wheel, G, at its extremity. This wheel gears into a small intermediate one on a standard, and this gears again into the wheel on the spindle of the right cone, A, and thus it is that these two cones have rotary motion imparted to them. The right cone, A, has bevel teeth on its bottom also, and these gear into teeth, *a*, on the bottom of the other cone, A, imparting motion to it; and then through the same kind of gear wheels, as G, the train, C, gives rotary motion to the left off-cone, B. There is an arm or support, E, on each side between the cones; it is secured with and springs from a central support, H, and is for the purpose of supporting the end gears and their journal boxes. The rotary motion of these cones revolves the large double cone for receiving the wool, which is set with its greatest diameter on the middle of the cones, and it therefore is supported by them, and revolves in the middle on them. The end spindles of the cones can be elevated and depressed by the screw bearing standards, *e e e e*. The spindle boxes of the cones are peculiarly constructed, so as to obviate the journals binding in their bearings. Two hat bodies are formed at one operation on the same cone. It is a simple machine, durable in all its parts and occupies but a very small space.

In connection with this machine, Mr. Boynton has also on exhibition other apparatus for conducting the manufacture of hats.

He has a machine for extracting the water from them, and which will deprive 100 wet hat bodies of their moisture in five minutes. He has also an apparatus for coloring, and one for washing them. A new method of constructing and heating his irons for pressing his hat bodies is also worthy of attention. He heats his irons by gas, making the interior of each iron, while heating, a chimney, and the spent heat he uses for raising steam. His machinery and apparatus form an original series, worthy of close examination, for carrying out in all its details this important branch of manufacture.

MANUFACTURING WOOLEN HAT BODIES.

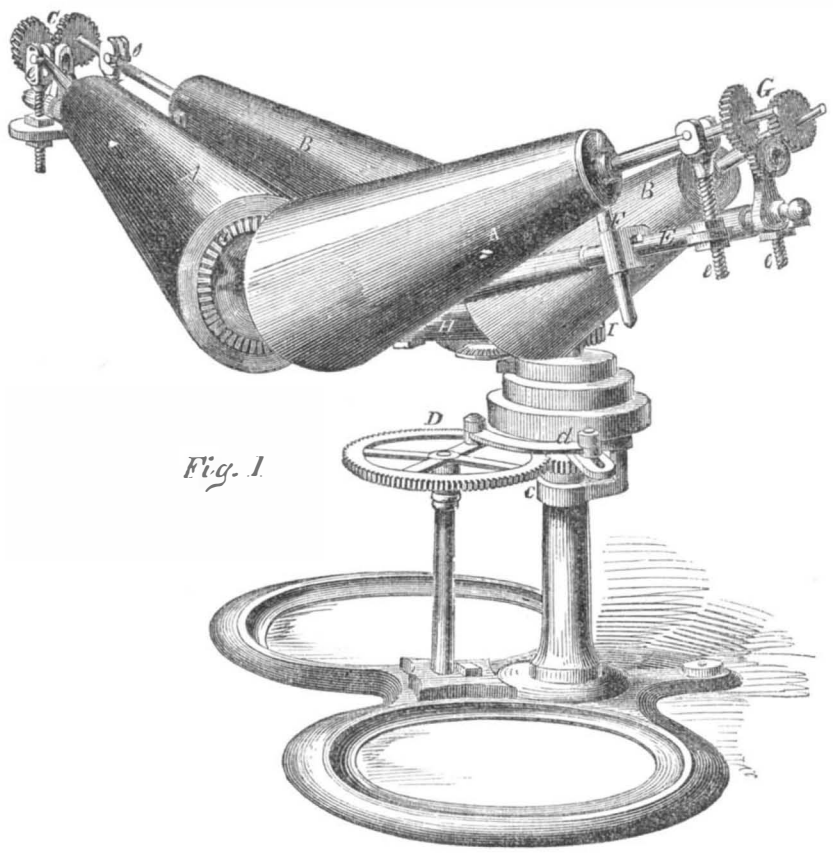

Fig. 1

HUTCHINSON'S STAVE JOINTER.

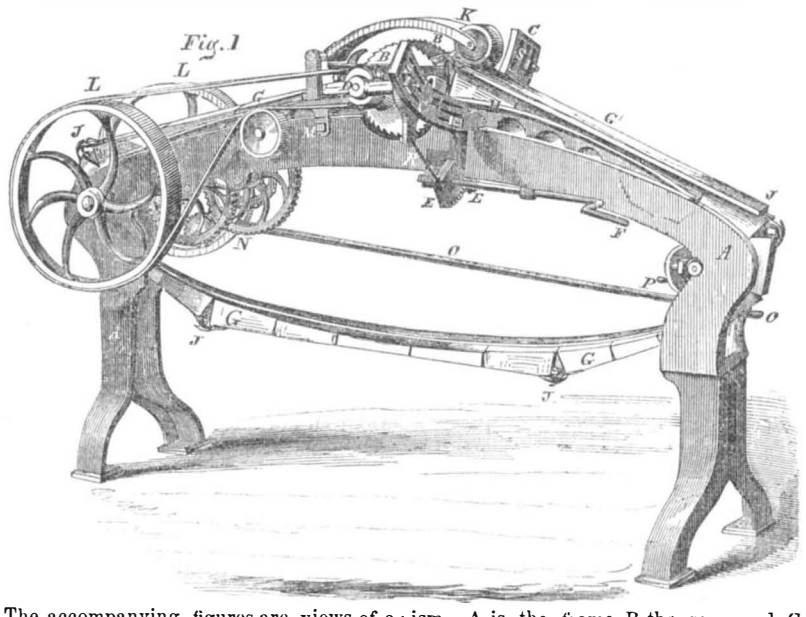

Fig. 1

The accompanying figures are views of a machine for jointing staves, for which a patent was granted to C. B. Hutchinson, now of Auburn, N. Y, on the 4th of October, last year, and the machine is now in operation in the Crystal Palace. Figure 1 is a perspective view, and figs. 2 and 3 are diagrams to show the motion of the stave relative to the saws, which gives it the desired bilge and bevel—omitting the details of the mechanism. A is the frame, B the saws, and C a transverse vertical plate, pierced with circular guide slots. D are the journal boxes of the saw (one for each spindle); they are made with wide flanges which fit snugly against plate, C, and are secured by studs and clamps, allowing to the saws a sufficient range of motion in an arc concentric with the slots.—R are short connecting rods proceeding from the flanges of the boxes, D, to the toothed sectors, E E, which mesh into one another and are operated by the winch, F, by turning which the saws are made to approach or recede, so as to receive staves of any desired width, still pointing to a constant center at *r*, fig. 3. An index, not shown in the fig., guides the eye in setting the saws instantaneously, to the exact width required for each stave.—G is an endless chain running over the central arch piece, H, and its upper surface, when on the arch, being tangent to the circle of motion, and constituting a series of bed-plates on which the staves are successively laid to be carried between the saws, as one is shown in the figure. The arch piece, H, consists of a ridge or spine rising from the frame, A, and cast solid with it, arched on top, over which is sprung and secured a strip of half-inch flat iron, previously plowed with a groove through its whole length, leaving on each side a raised edge to confine and guide the endless chain which runs in this groove. To this grooved rail any desired curvature may be given by wedging it up from the solid part, or interposing a curve-shaped strip of wood of proper thickness. The first and last links of each bed-plate are furnished with dogs, J, which, as they rise upon the arch, close over the end of the adjoining bed-plate, and hold down the stave, releasing it after passing the saws. K is a weighted roller, bearing on the stave near the cutting point. P is a carrying wheel over which the chain turns, it being driven by a corresponding wheel at the other end of the frame, not seen in the figure, to which

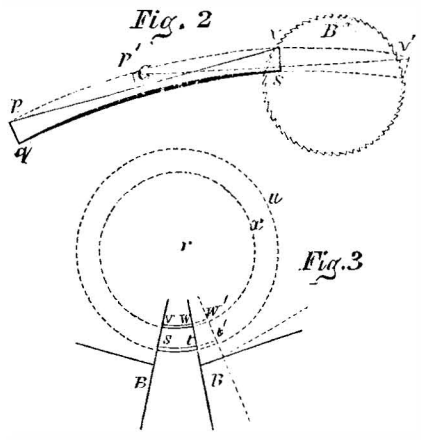

Fig. 2

Fig. 3

motion is transmitted from the main shaft by the gearing, N, which is thrown into action by depressing the lever, O. L are the pulleys that drive the saws, by belts running over the roller, M. The main driving pulley is on the shaft of the pulleys, L.

To explain the action of the machine, let *q s*, fig. 2, represent a part of the curvature of the central arch piece, *p v*, one of the bed-plates, in the position where the end of the stave meets the saws, G, being its middle or tangent point, and *p' v'* its position when half way through. It is obvious that while the ends of the stave will move in the arc, *p v'*, and meet the saws in the point, *v*, the middle will move in a concentric arc of less radius by the distance, *p'* G, and will meet the saws that much lower down, say at the point, *s*, fig. 3. And as the saws converge towards a center at *r*, the ends of the stave will be of the least width, *v w'*, fig. 3, the middle of the greatest, *s t*, and points equidistant from the middle on either side of equal width in proper proportion. The same will be true in any other position of the saws, as designated by the dotted radial line in fig. 3, in which, if *v w'* is greater or less than *v w* by one half or in any other proportion, *s t'* will be greater or less than *s t* in the same proportion; the end width being to the middle width in the uniform ratio of *r v* to *r s*, that is, of the circumference *v u x*, to the circumference *s t u*. Therefore all staves

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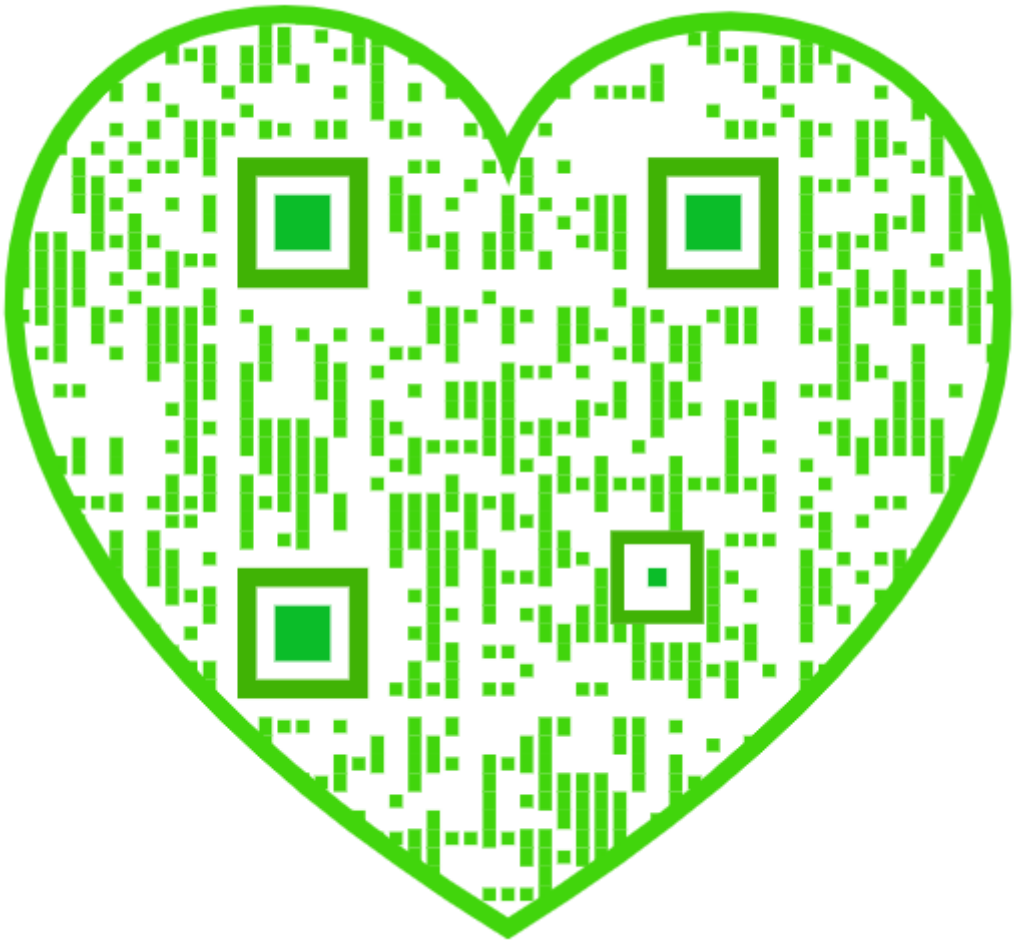

thus jointed, of the length *p o*, will work into uniform and symmetrical casks of which the head circumference will be *v w x* and the bilge circumference *s t u*; and this whatever the width of the stave, the bilge given to each being in exact proportion to its width, and as the saw cut is towards the center, the bevel will of course be right.

The principles of the machine thus demonstrated may be applied in a great variety of ways, modified as circumstances may require. The amount of bilge given to the stave depends on its length, the pitch of the saws, and the curvature of the central arch piece, by varying one or more of which, the effect might be varied almost indefinitely, to suit any required form of cask. All the adjustments practically desirable for such purposes are provided for in the construction of the machine. It is applicable alike to thick and thin staves, for dry or tight work. Rotary cutters may be used in place of circular saws, if desired. Constructed as illustrated, the machine is capable of jointing from 800 to 1000 flour barrel staves per hour. For speed and quality of performance, and facility of adapting to any description of work it is believed by the proprietors to be unequalled. It joints the stave with mathematical accuracy, without bending or springing it, and is instantaneously adjustable to any desired width, without stopping the motion of the saws or cutters.

For further information, apply to the inventor at Auburn, N. Y., or to C. B. Hutchinson & Co., at the Crystal Palace, where one of the proprietors is in attendance. C. B. H. & Co. will also have a depot in this city after the Palace is closed, of which due notice will be given by advertisement.

Gelatinous Substances.

Professor Owen, when lecturing on the results of the late London Exhibition, spoke warmly and well respecting the economical value of little fragments from the animal world, little bits which our forefathers were wont to throw away. He dwelt on the fact that the most uninviting, and seemingly most worthless parts of animal bodies, are turned to uses of the most unexpected kind by the inventive skill and science of man. He remarked that the most signal progress in the economical extraction and preparation of pure gelatines and glues from the waste remnants of the skins, bones, tendons, ligaments, and other gelatinous tissues of animals, has been made in France, where the well organised and admirably arranged establishments for the slaughter of cattle, sheep and horses in large towns, give great and valuable facilities for the economical application of all the waste parts of animal bodies. Indeed, this is one way to measure our total progress.—While some men are striving to make better use than our forefathers of substances always recognized as valuable; others are directing their attention to humble and lowly bits and scraps which a former age would have spurned, kicked, trampled on, despised, burned, and otherwise maltreated. Many generations ago, the French chemist Papin set to work in good earnest to solve the problem of gelatinous mathematics, and a very sensible problem it is too. He made a vessel which he called a digester, closed everywhere except at a small hole at the top, which was provided with a safety valve; the digester was enormously strong; insomuch that when the valve was weighed down heavily water could be made to boil at a much higher temperature than the two hundred and twelve degrees. This was the gist of the whole matter; for whatever may be extracted from bone by hot water, much more can be extracted by doubly hot water.

Papin broke his bones, put them into the digester, made the water boil at a fierce heat, and obtained a gelatinous extract, which became a tremulous solid when cold.

Another old philosopher of those days, Boyle, found the means to make the most of a cow's heel. He exposed it to a moderate heat for four hours, in a perfectly close vessel, without any water; he then found the entire heel to be so softened that he could cut it up with a knife, as if the softer parts had furnished moisture for mollifying the rest.

The late Mr. Aiken found that after extracting much gelatine from bones by ordinary boiling, there was another portion which nothing but a higher boiling heat could literate from the cellular structure of the bone.

During the long Napoleonic wars, bone soup was made in some of the hospitals and military head-quarters of France, by Papin's method, and many pamphlets were written in advocacy of the plan of collecting bones as a soup-making article of food in besieged garrisons. Those who have tasted it say, however, that bone gelatine extracted at this high temperature has a sort of unpleasant burnt flavor; and certain chemists have suggested quite a laboratory-like mode of proceeding. First, take your bones, boil them to extract the fat, steep them in very diluted muriatic acid, to dissolve the earthy basis; wash the remaining semi-transparent gelatinous mass in water, dissolve it in forty times its weight of boiling water, evaporate the jelly thus produced to a state of greater consistency, and there is your soup. Whether bone soup is really made, let the scientific cooks declare; but it is certain that the scrapings, shavings, and sawdust of bones are used by pastry cooks as a material for jelly, which is yielded more readily on account of the attenuated state to which the fragments of bone have been previously reduced, and the jelly is said to be nearly as good as calf-foot jelly. Bone gelatine is imported from France in cakes or sheets, to take part in preparations for the table. A well disposed cow or sheep would not be niggardly in the bestowal of their gelatinous treasures. Skins, membranes, tendon, ligament, bone, hoof, horn, feet, all yield gelatine. In producing that gelatinous substance which artisans call by the somewhat unmeaning name of *size*, it is customary to use clippings of hides, hoofs, horns, and feet, and the refuse from skins of horses, dogs, and cats, and the shreddings of parchment, vellum, and white leather, are all welcome to the size tubs; these are cleaned and boiled, and skimmed and strained and cooled; but the making of glue is a yet more curious affair. Go into one of the glue factories between London Bridge Station and Greenwich; you find heaps of flaps, roundings, scrapings, and cuttings of skins—all sorts of refuse indeed from the tanners and leather dressers' yards. You see how these bits and scraps are cleansed in lime water, rinsed in clean, dried on hurdles, boiled to a jelly; you see how this jelly is clarified, cooled in large masses, cut by a spade into square cakes, and further cut by brass wires into slices; you see how these slices are placed upon nets stretched across wooden frames, how these frames are piled up in open air, how they are roofed over to protect them from rain, how these slices are turned two or three times a day to facilitate their drying, how they are kept in lofts for months to harden, and how they become glue. Gelatine casts are a pretty example of one mode in which glue may be made ornamental, or at least subservient to ornament. They are properly not casts but molds for casts; and the reason why they are valued is, that the elasticity of the material removes many of the objections attending the use of sand clay, wax, or plaster for molds. Pure gelatine, or gelatine mixed with treacle, will furnish a very elastic material for molds. Casts from anatomical preparations, casts from calcarious concretions, casts from vegetable substances, casts from ivory carvings, have been obtained in great beauty from gelatine molds; the material is so elastic that no amount of alto-relievo or under cutting will baffle it.—Gelatine casts from gelatine molds can soon be produced; and as these casts are very elastic, we may obtain carved bas-reliefs from flat or plain originals.

The extraordinary electrotypic arts are not altogether unindebted to these gelatinous casts and molds, for the gelatine may be impressed upon an electro-coppered work of art; or the electro-coppering may be effected upon a gelatine cast properly coated on the surface with black lead or some other material.

The French manufacturer, who designates himself a *Gelatineur*, tells us, in his trade circular, that until recently the high price of pure gelatine has rendered this substance available only for articles of luxury, but now, when it can be obtained either from bones or from common glue, it ought to be cheaper.

The *gelatineur* enumerates one by one the several purposes to which this really pretty substance is applied. First, he says, he can apply it as a layer to the surface of an engraving or woven material, to which it serves as a varnish. He can make it into a thin cartoon, for address cards or images, which may be either colored or colorless. He can make it of the same thickness but yet more transparent, to assist wood engravers and others in transferring or copying their designs. He can make it as exquisitely thin as the thinnest paper, as supple as silk, as transparent as glass, and he sells it to the perfumer as envelopes and wrappers for his dainty bottles and boxes; to the *fleuriste* as a material whence to make transparent artificial flowers; to the lithographic printer, as a delicate paper whereon he may print in gold, silver, or colors. It was this crystal or gelatine paper which shone so brightly at the London Exhibition, in sheets as large as five feet by four.

Prof. Owen, in his lecture before alluded to, speaks of M. Grenel, of Rouen, France, as having been the first to fabricate largely out of various residues of animal bodies, of little value, beautiful and diversified products, many of which had previously been derived from the more costly substance, isinglass. He speaks also of "the different kinds of gelatine in thin layers, adapted for the dressing of stuffs and for the clarification of wines which contain a sufficient quantity of tannin to precipitate the gelatine; pure and white gelatines cut into threads for the use of confectioners; very thin, white and transparent sheets for copying drawings, and any quantity of objects of luxury or ornament, formed of dyed, silvered, or gilt gelatines, adapted to a variety of purposes, and to the fabrication of artificial and fancy flowers."—These facts, abridged from the *Household Words*, are interesting to our people, as showing what can be done with substances capable of being reduced to a jelly. In the arts, the French are surpassingly adroit and curious, and it will be worth a journey to Paris in 1855, to witness under the roof of the Palais de L'Industrie, the countless varieties of ornamental products which will be there exhibited.

How to Talk to the Deaf.

Messrs. Editors.—Persons who are unaccustomed to conversing with the deaf, in talking to them, endeavor to impart a certain force to their voices, which gives them a harshness that only confuses the sound to the hearer, strains the speaker and annoys all present; when if they would only prolong the sound, or pronunciation of each word, in a slightly elevated and smooth tone of voice, they would be heard with much less difficulty.

Musical sounds are generally longer and are heard further than others of the same pitch; the vibrations in the metal of bells, and in musical strings, continue the sounds after the causes of them have ceased. The report of a pistol appears to be twice as loud as the filing of a mill saw, when we are but a short distance from them, and yet the latter can be heard twice as far as the former; for the file not only makes a longer sound, but the vibrations of the saw continue it. In announcing steamboat arrivals, the prolonged shrill notes of the steam whistle has superseded the thunder of the cannon. It is probable that the first impulse of any sound is spent in overcoming the inertia of the atmosphere, and that overcome, and the air put in motion, the remainder of the sound is wafted away by its undulations. H. Pollard.

Lexington, Mo, Sept. 21st.

A few days since we received a call from Judge Mason, the Commissioner of Patents, and were pleased to learn from him that the business of the Patent Office is in a very favorable condition.

Brick Burning with Bituminous Coal.

In October last year, I presented an article in the Scientific American, on brick burning, acquired by ten years' experience in the business. It has been copied into other papers, extensively circulated and become a text book with many in different parts of the country.

For several years past I have given much attention to burning bricks with Cumberland coal, and for that purpose built a kiln expressly as an experimental one. It was altered and re-altered again and again, often attended with loss and disappointment. My progress was watched with interest by others of the profession, and some of my abortions have been imitated and put forth to the world as new.

The late rise in the price of wood has stimulated me to still further efforts, and at length my labors have been crowned with complete success.

By a simple arrangement of the flues, the long sought-for desideratum of settling both heads at once, is accomplished, and strange as it may seem, by closing all the mouths during the last half of the burning—just when most important—the kiln is fed with hot air. I have just burned a kiln of twelve arches, set 40 high, containing 260,000 bricks, with 37 tuns of coal and eight cords of wood, no coal dust in the clay. The same kiln in the old way has generally consumed one hundred and ten cords of wood, often more. A comparison will show this result at present prices, both delivered at the kiln.

110 cords of wood, $4,50 . . .		$495
37 tuns of coal, $4 . .	$148	
8 cords of wood, 4,50 .	36	—184
Difference in favor of coal		311

In the use of coal much depends on the management. We are only beginning to learn something about it. In November last a locomotive on the Baltimore and Ohio Railroad, consumed 5,922 lbs. coal running from Martinsburg. The same engineer after several trials ran it with the same train and used only 3,970 lbs.

The feed door should be opened as seldom as possible. The fireman in the case above mentioned, stood ready with his shovel filled, opened the door rapidly, scattered the coal lightly over the surface, then closed the door with his foot. Feed often but light; the fire may be smothered with coal as well as water. Keep the grates free of clinker and ashes. I have a small middle door for the purpose, through which this is done without opening the larger one. The bed of coal should never exceed six inches in depth, and should be kept level. Unfortunately, in the burning of this kiln, I had none but green hands, and in spite of every care I sometimes found twice the proper quantity put on. This not only wastes coal, but obstructs the draught, and keeps the heat below, instead of above, where it is required. Francis H. Smith.

Baltimore, Oct. 2, 1854.

Telegraph to America.

A patent has now been signed, allowing T. P. Shaffner, the American agent, to construct an electric telegraph from North America, over Greenland, Iceland, and the Feroes, to Norway and Copenhagen. A plan is in agitation for a continuation of the Danish electric telegraph direct to England, over the sea from Tonning. It is to be hoped that this important scheme will be realized. We shall then escape the *tracasseries* of the Prussian Line.—[London Jour.

[This paragraph we cannot understand.—Who granted the patent spoken of above? Not the government of England, as it can only grant patents for new inventions. And what kind of potentate could grant such a patent, seeing it is to pass through the dominions of three sovereigns? This paragraph has appeared in quite a number of our exchanges. We are sure there must be some mistake about it.

The Mobile *News*, speaking of the relief sent for Savannah by the American people, says, "We are a great people indeed. We will cut each other's throats about abstractions, but let calamity enter a household, and the hearts of the millions throb as one man."

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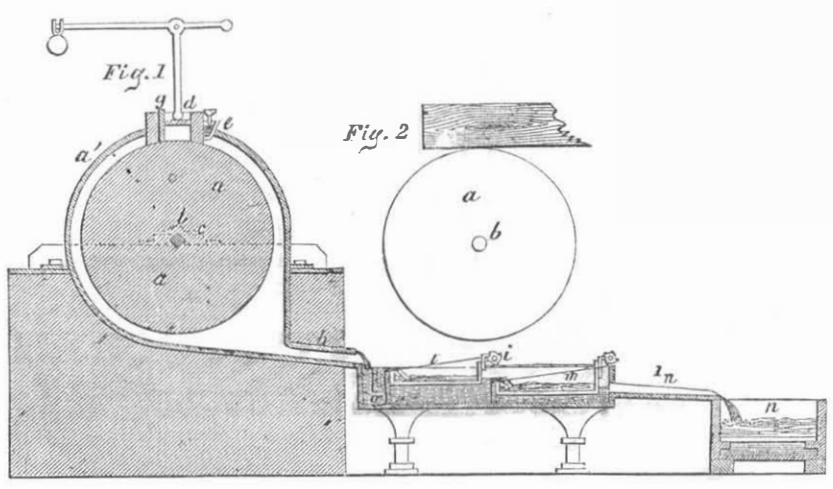
Making Paper from Wood.

The accompanying figures represent machinery and a process for reducing blocks of wood to pulp for the purpose of making it into paper. A patent has been recently taken out for this process by R. A. Brooman, of London, and illustrated and described in the last number we have received of Newton's London *Journal*, but as Mr. Brooman is only the agent who secured the patent, we presume the inventor is not a native of Great Britain.

The machinery preferred to be employed for the purpose of obtaining the fibers of wood and woody substances consists of a millstone or millstones, or metal roller, cylinders, or rasps with roughened surfaces, which are caused to act upon blocks or pieces of wood held in a frame always in the direction of the grain thereof, a current or stream of water being directed on to the stone or other reducing agent immediately before its contact with the wood. A gauge is provided to prevent the passage, with the water, of such portions of the wood or woody fibers as may not be sufficiently reduced. The fibers come from the stones, rollers, cylinders, or rasps, in a state of pulp, and are passed through sieves of different ganges, from which they are taken to be applied to the manufacture of different qualities of paper. The pulp thus obtained may be mixed with rag pulp, and with various other ingredients now employed in the manufacture of paper; and the pulp is subjected to form it into paper.

Figure 1 represents a vertical section of a machine suitable for reducing wood and woody fibers to pulp for the manufacture of paper.—The main part of this machine consists of a circular millstone or cylinder of steel, iron, or other metal, having a rough surface, and fixed in a vertical position on a shaft which revolves in suitable bearings. *a* is the millstone, and *b* the shaft on which it is fixed, turning in bearings, *c*, which rests on beams or on a stone or iron foundation. The millstone turns in a box or casing, *a'*, the under part of which is provided with an outlet, *h*, for the ground pulp.—The speed at which the stone is driven is preferred to be from 180 to 240 revolutions per minute, when it is about 4 feet in diameter.—The upper part of the casing, *a'*, enclosing the stone, has an aperture, in which is placed the frame, *d*, which is open at the bottom, and the four extremities of which come nearly in contact with the stone. At one side of this frame is formed a perforated compartment, *e*, which is intended to receive the water required to wet the stone and mix with the fiber to form pulp; and on the other side of the frame and opposite to the compartment, *e*, is fixed within the frame an iron or steel gange-plate, *g*, which nearly touches the stone, and is intended to prevent any large particles of fiber, which have not been sufficiently reduced, from passing into the outlet, *h*. This gange-plate can be raised or lowered by hand, or by tappets, or other suitable contrivances, according to the extent required, to suit the material operated on. The wood or woody substance to be reduced to pulp is placed with its fibers running in the same direction as that in which the stone revolves, as before particularly directed, and as shown in the detached view, fig. 2. This arrangement is absolutely essential, as upon it depends entirely the production of fibrous pulp suitable for the manufacture of paper. The wood is cut into suitable lengths, which are put into the frame, *d*, in the position described, and pressed down or held with the grain of the fiber parallel to the direction in which the stone rotates, by a lever and weights, or by any other convenient means, on the grinding cylinder. The fibers, when separated from the wood are carried away by the streams of water, and passing downwards, escape through the outlet, *h*, into a vessel, *i*, which is furnished with a partition, and after having passed the partition they flow gradually into a sieve, *l*, which, by means of tappets, *i*, is jogged or shaken, in order to separate or divide the finer from the coarser particles of the pulp. The finer particles, in the same way, pass again into a sieve, *m*, where a second separation takes place; and, proceeding onwards, they are allowed to flow under the sieve, *n'*, which allows water to escape, and from whence the fine pulp is conveyed into the reservoir, *n*. The separation may be carried on to a greater extent, as may be found requisite. The sieves are of different ganges, from coarse to fine. The different qualities of pulp thus obtained may be employed for the manufacture of paper of different qualities, alone or mixed with any pulp of the sort ordinarily used, and with such other ingredients as are generally employed in manufacturing pulp into paper. The wood pulp may be bleached by any ordinary process, or by means of the following process: Mix the pulp, in the first place, with a solution of carbonate of soda or soda ash, and subsequently with a solution of alum; the strength of these solutions being regulated by the degree of white-



ticular arrangement of machinery represented and described, for reducing wood to fibrous pulp suitable for the manufacture of paper.

Owing to the high price which rags for making paper have maintained for nearly a year past, much effort has been bestowed upon making good printing paper from various cheap substances, and the above invention is the result of such investigation in one direction.—That paper could be made from wood, is a fact long and well known; the economy of making it, and of a proper quality, has been the grand desideratum. It has been attempted to make good white paper from straw, and the Philadelphia *Ledger* is now printed on paper made of a mixture of straw and rag pulp—straw pulp of itself producing too hard and brittle paper for printing.

We have received a letter from J. A. Crever, Ohio, (Editor of the Bucyrus *Journal*,) in which he suggests the employment of corn stalks for making pulp and from the sample of the raw material which he has sent us, we have no doubt but it would make good paper.

We have also received from H. Clark, of Florida, a sample of fibrous palm plant, which we believe would make goodpaper, and which can be found in abundance in that State. The sample which he has sent us, we are confident, would make a very strong and tough paper. He says, "it grows to about two feet in hight and covers thousands of acres of the poorest land, and the roots are so numerous and large, that no attempt is made to cultivate the land on which it grows. Their roots also possess more tanning matter than most of the barks used in making leather." This new tanning material deserves more attention from our tanners.

A paper manufacturer in England, who has recently visited the United States in search of information relating to his business, has communicated his experience to the London *Daily News*. In Great Britain, there is a heavy excise duty on the materials for making paper, which is paid by the manufacturers, and this has greatly retarded the introduction of improvements in that country. In his letter, the manufacturer referred to, says, "It is perfectly true, that the material necessary for making paper is in existence to any extent, and only requires to be developed. They have found this out in countries where the trade is free and enterprise rife, viz.: the United States. In that country the consumption of paper is just four times as large as our own per head, and may be put down at 300,000,000 lbs. annually.—Manufacturers have recourse to substances scarcely known here, and straw is employed, strengthened with stronger fiber, for thin and thick woven papers, as well as for mixing with white paper pulp. The waste from palm leaf manufactures, swamp canes, wood shavings, and other materials, are employed in making paper, and the quantity of white paper is made more abundant by brown being employed for many purposes it is not employed for here; such as envelopes and thin wrapping papers. The material for making brown paper is, and will be always, more abundant than those for white paper."

This manufacturer overlooks the fact that the color of material is of no great importance, if the quality is obtained, as it is very easy to bleach almost any vegetable substance with chlorine. Respecting the manufacture of paper in our country, he says, "Stimulated by the reports of Messrs. Whitworth and Wallis, I visited the States to see how they managed the mills there. *I was completely taken by surprise at the advanced state of the trade in every department, up to the finest writing and drawing papers.* Every improvement that had been invented in our own country is in universal operation there. The elastic state of the manufacture arising from a constantly increasing demand, the free communication between one man and another on all matters connected with machinery, the intelligence of the workers, and, above all, freedom from any legislative regulations or impediments, all combine to produce a state of the highest prosperity. It is true that the raw material is becoming as scarce there as it is here, and is, besides, 20 per cent. dearer; but fresh sources of supply are being opened, which promises to be inexhaustible. I myself saw and have specimens of an excellent quality of printing paper, made from the canebrake found on the banks of the great rivers there, under a new simple process. Should the plan be carried out, there will be no scarcity of material in America.

The short supply felt in England has been made shorter by the large exports of rags to the United States. Besides taking this supply the Americans buy up, for their own consumption, material we cannot use for the same purpose, from sheer want of knowledge of our business. Nor will there be any great improvement till there is new blood in the trade, and its shackles are entirely removed."

This is high testimony to our advancement and superior modes of manufacturing paper; we have no doubt but, from the great amount of attention which is now being paid to make good printing paper, from other and cheaper material than rag pulp; and also from the great number of experiments now making to develope the same, that in the course of a year or two from the present time, the price of paper will be greatly reduced. The above engravings, and the foregoing information, we present to our people, to assist and stimulate them in advancing improvements in this manufacture, knowing as we do, that cheap paper affords means to disseminate a greater abundance of useful information among all classes.

Recent Foreign Inventions.

Purifying Gas.—John H. Chisholm, chemist, London, has taken out a patent for purifying gas by the silicious earthy matter containing oxyds of iron and manganese, and which are found under peat bogs and alluvial deposits. He also employs the ferruginous gravel that overlies and is intermixed with the chalk formations; also the ferruginous loam of the alluvial formations.

Cleaning Flues of Tubular Boilers.—E. and J. Rowland, of Manchester, Eng., have secured a patent for cleaning the flues of boilers by blowing steam through them.

Foundations of Buildings.—G. Bird, of the city of Glasgow, has secured a patent for a method of laying the foundations of houses, in damp situations, in order to prevent the moisture rising in the wall. It simply consists in laying down a mixture of asphalt and broken stone in the bottom of the trenches. It is well known that moisture rises from the earth in walls as if by capillary attraction; this method of laying the foundations of houses will prevent the damp rising, by acting like a seal upon the lower face of the foundation wall.

Coating for Iron and other Ships.—A. Robinson, of London, has taken out a patent for a compound of black lead (plumbago) and asphaltum, to be applied to bottoms and sides of vessels, in a fluid heated state, as a coating or paint. The asphaltum is heated to a fluid state in an iron kettle, then the plumbago at the rate of 2 ozs. to the pound of asphalt is stirred up with it, until it thoroughly incorporates, when it is applied by brushes to the bottom of the ship. If some arsenic is mixed with it, for wooden vessels, it prevents the attack of barnacles.

Aerial Navigation—Benj. O'Neil Stratford Earl of Aldborough, of Stratford Lodge, Wicklow, Ireland, has taken out a patent for navigating the air. It consists mainly in the construction of wings to be used for the propelling of aerial machines, in such a manner that the wings compress the air by percussion, under the concave part of each wing, like that of a bird's.

This is not the first plan that has been proposed for navigating the air by moving the balloon with wings. It is a foolish plan at best, and we expect better things of Earls than of common people. It is very evident, however, that the Earl of Aldborough's mind is very different from that of some other Earls'. There is no aristocracy but that of mind in the Republic of Invention.

Feed to Millstones.—R. Chapman, of Norwich, England, a miller, has obtained a patent for applying the ordinary centrifugal ball governor to the hopper which supplies the grain to millstones, in the same manner that it is applied to the throttle valve of a steam engine, so that the valve is made to regulate the feed of the grain.

Wood and Tar Gas—H. J. Johnson, of London, has become the patentee of an invention for producing gas for illumination or heating purposes, from turf, wood, tar, and waste or refuse vegetable substances, such as cotton, paper, saw-dust, and chips.

Preserving Animal and Vegetable Substances.—M. A. Fatio, and F. Verdriel, of Paris, have taken out a patent for preserving the above-named substances by first steaming them—partially cooking them—and afterwards drying them for the purpose of driving off the watery particles.

Making Steel.—A. R. Brooman, of London, has become the patentee for manufacturing steel by employing a yellow or white heat instead of a cherry red heat in the reverberatory furnace, and employing a powder composed of equal parts of manganese and salammoniac, which he introduces among the melted metal. These substances are mixed with pounded charcoal.

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New Inventions.

Bolting Flour.

F. B. Hunt, of Richmond, Indiana, has taken measures to secure a patent for an improvement in operating wire cloth bolts for flouring mills, the nature of which consists in a peculiar means of adjusting the brushes which act upon the inner surface of the bolt. The brushes are made to expand and contract within the bolt by being secured to a hollow shaft having grooves and slides, to which springs are also attached, so that their pressure on the bolts can be easily regulated, and at the same time they can (the brushes) be adjusted without taking apart the frame and the wire cloth, as is now done in common bolts. The brushes can be adjusted in a moment, without disturbing any part of the bolting frame.

Explosive Shot for Cannon.

William Tibbals, of South Coventry, Conn., has taken measures to secure a patent for explosive shot for cannons which possesses peculiarities different from the other explosive shot heretofore tried. It is conical, hollow, and contains powder, has a nipple on its point and is covered with a jacket of soft metal which has flanges, and which allows of the shot being rammed down so tight as to prevent windage, but not affect the explosion of the percussion cap on the nipple of the ball. The shot is discharged by a charge of powder behind it, and when its point strikes an object the soft metal case is driven down forcibly on the cap, which explodes, ignites the powder in the hollow shot, and then it explodes, scattering destruction all around.

Fire Arms.

Among the many improved plans of firearms which have been brought before the public within the past year, we have to record another by Daniel B. Neil, of Mount Gilead, Ohio. It has for its object the firing of two charges, one after the other, from the barrel in which they are placed, by means of a common gun lock. Two priming holes are bored in the side of the barrel, and two charges are inserted at once. The lock is so arranged with a hammer having two heads, as to strike the cap of the first nipple on the side of the barrel, and discharge the first ball, and then to strike the nipple of the second priming orifice, and discharge the second ball. This one barrelled gun is intended to possess all the advantages of a double barreled one. It can be charged with ball or shot. Applied to fowling pieces it is believed to be an improvement of great value. Measures have been taken to secure a patent.

Improvement in Gates.

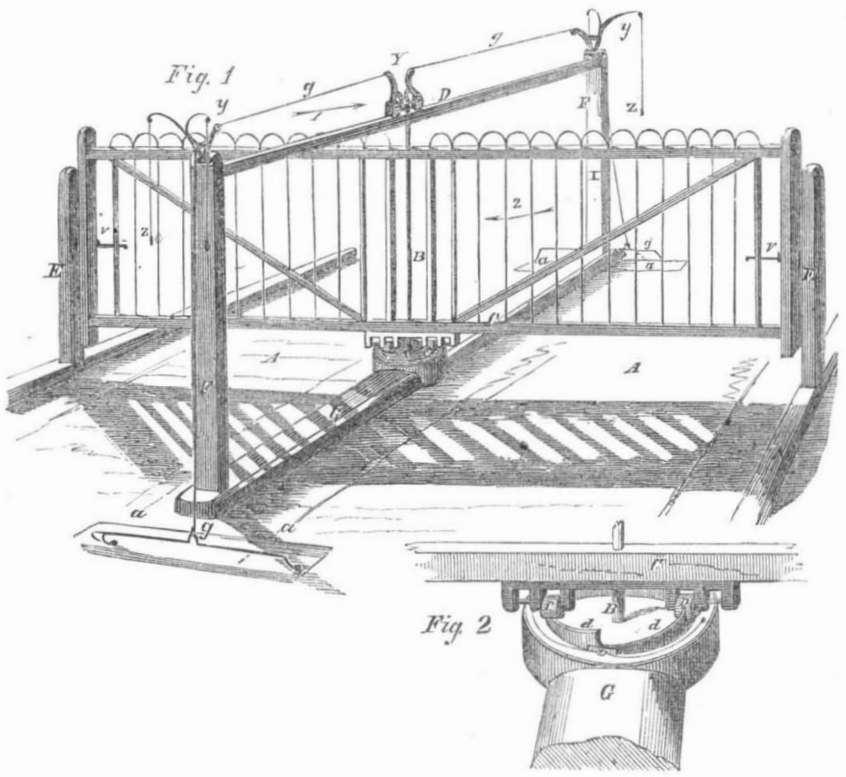
Figure 1 is a perspective view of a new Self-opening and Closing Gate, and figure 2 an elevated section of the gate bar and central post, with its friction rollers running in the inclined guide ways of a box. The same letters refer to like parts.

A patent was granted for this improvement in gates to Wm. G. Phillips, of Newport, Delaware, on the 7th of last March. The nature of the invention consists in providing the gate post or pivot, and the platform with springs, so arranged that a vehicle passing on to the platform will press upon a spring, and so operate the gate as to allow the vehicle to pass through, and in going from the platform on the opposite side, another spring is pressed by the carriage, which causes the gate to close.

A is the platform, it supports the whole working apparatus, and is of sufficient width for the passage of the carriage on each side of the guide post, B. The gate, C, is hung at its center on this post, and is kept in an upright position by a bolt passing from it through a cross beam, D, which is supported by two uprights, F F, Attached to the gate, C, on each side of the foot of post B, are two friction rollers, *c c*; these rest and act upon four inclined planes, *d d*, fig. 2, which are made in a box—each plane is about one-fourth the circumference of the circle. Partly cross-wise of the carriage track there is a lever, *a*, (one on each side,) which projects a little above it near uprights, F; this lever rests apon another, *g*, which runs in the direction of the tracks and between them (not shown, and which actuates a spring, also not shown,) under G, which tilts the roller box, which rests upon a pivot; this allows of the horizontal play of about one-eighth of the circle, which is regulated by a pin, so that when the gate is lifted the planes move in a contrary direction to the gate. Supposing a carriage to be passing through in the direction of arrow 1, when its wheels come on the lever, *a*, it will actuate the one, *g*, which will operate the spring under the guard, G, which will tilt the roller box on the guard upwards, thus lifting the gate, and its roller, *e*, will run down the inclined groove, and this will make the gate swing in the direction of arrow 2, on its center post, B, to one-fourth of a circle, allowing the carriage to pass, through, until its wheels pass over *a*, on the other side, beyond the gate, when the levers act upon the spring which raises the roller box, in the same manner as that described for opening the gate, but which, being a reverse motion, closes the gate. The description of one side will answer for all the others, which are like it. E E are the end posts to support the gate, the catches, V V, working in grooves which are made to let them in and out, according to the tilt of the gate. A person passing on horseback, has only to pull upon the cord, *z*, which is secured to a bell crank lever, *y*, which has a cord secured to it and attached to the head of post, B at Y. By placing a weight on the top of the center post, the gate is made to act more rapidly.—The claim is for the double span rotating gate, opening and closing by the means described or any similar devices.

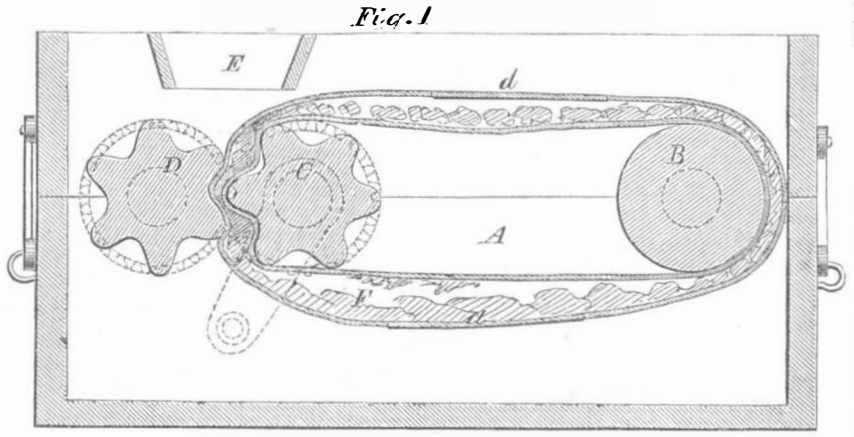
More information may be obtained by letter addressed to the patentee at his place of residence, Newport, Del.

SELF-OPENING AND CLOSING GATE.



IMPROVED BUTTER WORKER.

Fig. 1



The annexed engraving is a vertical longitudinal section of an improvement in Butter Workers, for which a patent was granted to Ezekiel Gore, of Bennington, Vt., on the 25th of last July.

The nature of this invention consists in the employment of an endless revolving sack or bag for containing and confining the butter, and conveying it to and between two fluted or working rollers, and through the water in the tub or box as fast as the rollers operate upon it, until it is thoroughly worked, washed, and seasoned.

A represents the box or tub which contains the water for washing the butter, and also supports the bearings of the rollers, B C D. The box, A, is made in two sections, so that its upper part may be removed, and also the rollers and sack, when it is desired to cleanse the lower part. The roller, B, is made perfectly smooth, and has its bearings at the back end of the machine, and the roller, C, is fluted, as shown, and has its bearings near the front end of the machine. On and around these rollers, the sack, F, is arranged as represented. The roller, D, is fluted similar to C, and operates in concert with it, but is prevented from touching it by the sack which is placed and revolves between it, as illustrated.

The sack carries the butter between the fluted rollers, and said rollers, as the butter passes between them, effectually operating upon it, and working it to the state desired. E is a hopper arranged above the fluted rollers, as represented; through this hopper the salt is introduced between said rollers, which work it into the butter as the sack feeds it between them. The sack, F, has two openings, *d d*, for the insertion and removal of the butter; the butter cannot escape out of said openings while the working and washing is being performed, as the cloth forming the bag is made to over and underlap at the places where the openings are formed.—There is cog gearing for turning the fluted rollers in opposite directions, and a crank for turning the same.

The operation is as follows:—The butter is placed in the sack and the tub filled with water; the fluted rollers are caused to revolve, and set the sack in motion. The sack and butter are thus caused to pass between the fluted rollers under the salt hopper, and then through the water until thoroughly worked, cleansed, and seasoned.

More information may be obtained by letter addressed to the inventor.

Horse Shoeing Apparatus.

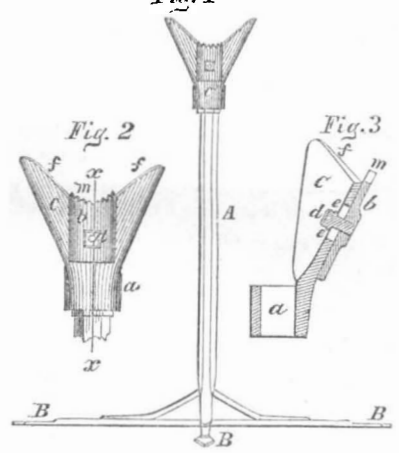
Noah Warlick, of Lafayette, Ala., obtained a patent on the 29th of last August, for the invention represented by the accompanying engravings, figure 1 being an elevation of the apparatus; figure 2 is an enlarged view of the top of figure 1, and figure 3 is a section of figure 2 on the line, *x x*. Like letters refer to similar parts.

The nature of the invention consists in the employment of a peculiar adjustable rest for the support of the horses foot during the operation of shoeing.

A is a standard maintained in a vertical position by the branches, B, or in any other suitable manner. Upon this standard, and held by the socket, *a*, passing over the standard is the head piece, C, having its upper edge hollowed out to receive the horses hoof. On this head piece is the adjustable serrated slide, *b*, held by the screw, *d*, which passing through the slot, *e*, of the head, admits of securing a slide in any desired position to which it may be moved.

The object of this apparatus is to firmly hold the horse's foot during the operation of shoeing; the operation is as follows. The slide, *b*, is adjusted by the screw, *d*, so as to give any desired amount of protrusion of its

Fig. 1



serrated edge above the upper edge, *f*, of the head piece and the horse's hoof rested upon the said serrated edge during the operation of fitting the shoe, paring the hoof, and fastening the shoe to the hoof; the serrated edge of the slide preventing the slipping of the hoof from the head piece.

The use of this support is of importance to the operator as instead of holding the horses hoof between his knees, and supporting its entire weight, he is enabled to devote all his attention to the adjustment of the shoe and the keeping of the horse quiet. The adjustable slide by which the amount of protrusion of the teeth, *m*, may be governed by the size of the hoof operated upon, places this apparatus above an ordinary support, on which teeth may be constructed for the prevention of slipping, and it is in this adaptation of the apparatus to all hoofs that one of the principal merits of the apparatus consists—the support at the toe during the operation of paring being insured to large as well as small hoofs.

The claim is for the head piece with the adjustable slide constructed and arranged as shown and described.

More information may be obtained by letter addressed to the inventor.

Wardrobe Bedsteads.

B. P. Hedgeman, of Connersville, Ind., has taken measures to secure a patent for some improvements in wardrobe bedsteads, one of which consists in applying a pair of spiral springs to assist in raising the bedstead, and a hinged pillow rest. Another improvement consists in providing ventilating side doors, something very necessary for such articles of furniture.

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Scientific American.

NEW YORK, OCTOBER 21, 1854.

Frightful Collision at Sea.

Our country, and especially the city of New York, is now clothed in mourning, caused by one of the saddest events that has transpired for a great number of years. The steamship *Arctic*, one of the staunchest of the Collins Line, while running at the rate of thirteen knots per hour, was struck by the French propeller *Vesta*, during a dense fog, on the 27th of last month, at noon, near Cape Race, and sunk in a few hours afterwards, carrying down to a watery grave a large majority of the passengers, of whom there were no less than two hundred and fifty. From all the accounts which have been received respecting the lamentable occurrence, it appears that both the *Arctic* and the *Vesta* were running at full speed, using neither bell nor whistle; and we have been informed that it is the practice of steamers and sailing vessels to rush on their ocean course during fogs at sea without employing any alarm to warn other vessels which might be in the same track. The reasons given for pursuing this nautical policy, are, first, that with regard to large steamships like the *Arctic*, it is safest to run at the highest speed, even if there should be a collision, as their great momentum must be in their favor; second, that the ocean highway is so broad that the chances of collisions are no more than one to a thousand against such a possibility. The fate of the *Arctic* shows that the first reason for high speed in a fog, was a selfish and false business maxim; and the second, in our opinion, is just as untrustworthy. The commerce between America and Europe is now so great, and is increasing so rapidly, that the probabilities of collisions at sea are becoming more imminent every day. By information from Loyd's, no less than forty ships which left European and American ports since the first of January last, have been lost, without leaving a single record behind to tell of their sad fate. Who knows but the City of Glasgow steamer, with its five hundred passengers, came in collision with another vessel on the dense dark banks of Newfoundland, and that both went down instantaneously to the bottom of the ocean. At any rate, a different course of conduct is demanded from the commanders of steamships navigating the ocean, than has hitherto been pursued. We have no doubt that, if the *Arctic* or *Vesta* had used their steam whistles, no collision would have taken place between these vessels, and the hearts which are now wrung with sorrow would have been lightsome and glad. A bell should be kept ringing the whole time a vessel is in a fog at sea. No excuse can be offered for not ringing a bell on any ship under such circumstances, and using a whistle by a steamship. It can easily be so arranged as to be operated by tappet machinery, and thus cost neither manual labor nor attendance.

This much we have said relating to the past practice of commanders of vessels during fogs at sea, and in regard to what should be their practice hereafter. All the details of the *Arctic's* collision, and many sad incidents connected with it, have already appeared in our daily papers, and are no doubt now familiar to our readers. We have only a few comments to make respecting the management and conduct of those who had charge of the unfortunate vessel. The number of passengers on board was two hundred and fifty; that of the crew one hundred and seventy-five. It is stated that there were boats on board of sufficient capacity to carry five hundred persons; also, that after the *Arctic* was struck, four hours elapsed before she sunk. The question then arises, "could not every person on board have been saved by proper management and discipline." It does appear that there were plenty of means at hand, and sufficient time to have saved every one on board, and yet with such an immense ship's force of one hundred and seventy-five persons to manage matters, so far as has been ascertained, only thirteen passengers have been saved, while the large number of eighty-nine of those attached to the steamer have been rescued. From statements made by those who were on board, it appears to us that no management was exhibited, and that discipline was set at defiance. The crew appeared to have cared well for their own safety; they deserted their captain, and he seems to have been paralyzed, but did not ignominiously seek, like them, to save his life by deserting his post. A dark chapter (which grieves us greatly) is given of the conduct of some of the engineers; they seem to have looked well to themselves. If the *Arctic* had not moved after she was struck, all on board might have been saved, as the *Vesta* was able to reach Halifax and save some of the *Arctic's* crew. By this calamity, the wife, son, and daughter of E. K. Collins, the active manager of the line, likewise a number of members of Mr. Brown's family, one of the proprietors, together with some members of the wealthiest and oldest families in our city and other cities in our country, have perished Their safety and lives were confided to the care of those entrusted with the management of the *Arctic*, but oh, how misplaced that trust was. We hope we may never hear of another such sad event.

Hot-Air Politics.

There appears to be a good deal of squabbling for office in this State at the present time, and owing to the large number of candidates in the field for the several offices, the quiet portion of the public are like mariners drifting without chart or compass upon the turbulent bosom of the sea. We usually exercise our right of suffrage, like other people, and endeavor to vote for such men as will, in our judgment, perform the official duties imposed upon them for the best interests of the State and nation. We are opposed to every species of corruption, and to all wire-pulling demagogism. In looking for any special platform, or any particular set of men to choose from, we find but one candidate in the field of whose views we feel at liberty to ask for a public enlightenment. We refer to our neighbor of the *Times*,—Mr. Raymond, advocate of the defunct "Ericsson Hot Air Speculation." If Mr. Raymond is still sound on that subject we shall have no difficulty in taking him as our candidate. Does Mr. Raymond still adhere to his former opinion, "that the interests of many persons will be affected by the success of the *Ericsson*, and the best way for them to protect their *interests* and *reputation* will be to assist themselves to the power of hot air?" Is "the use of caloric as a propelling power no longer a theory—no longer an experiment?" Is it "a fixed fact," as you formerly announced with such graceful triumph? Do you still think "caloric ships will very soon take larger cargoes at less freight, with lower rates of insurance than steamers?" Are the "theoretical demonstrations of our so-called *scientific* journals vanished altogether?" Mr. Raymond has been silent of late upon these questions and if "a change has come over the spirit of his dream" the *scientific* public will be glad to know it.

Our platform is a *scientific* one, and upon it we are determined to devote our best energies, having in view not only our own interests, but also the interests of the public, who expect candor in journalism.

A Few Words on Patents.

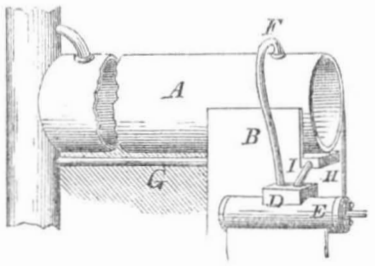
It is stated, on good authority, that the actual cash profits realized, this year, by the assignees of Ketchum's mowing machine, will not fall far short of *one hundred thousand dollars*. This may seem like a very large amount to those who have little knowledge of the value of patents or the progress of invention at the present day. But to us, such an announcement has no feature of surprise. We could name several other patents from which still larger sums are annually realized, while incomes of from $10,000 to $50,000 a-year, from such sources, are quite common.

Never in the history of this country or Europe, has such a propitious time existed for inventors, as the present. There is a growing demand for patents of all kinds, both at home and abroad. Rights which a few years ago were worthless, are now of precious value. The best of railroad stock is not to be compared, in monetary estimate and actual profit, to ownership in certain useful patents. In these hard times it is well to be acquainted with reliable sources of wealth and secure subjects of investment. The field of invention is open to all, whether learned or unlearned, rich or poor; but instead of being crowded with adventurers, only a few individuals, comparatively, enter it. The chances of success for inventors are better now than ever, and we wonder that there is not a greater strife among them than there is, although the number of inventors have multiplied three-fold within the past five years.

Wethered's Steam and Stame Apparatus.

This figure is a vertical section of an invention for which a patent was granted to Chas. E. J. and Saml. Wethered, of Baltimore, on the 25th of May, last year, and respecting which a number of inquiries have been made of us recently, as it was applied to, but not used by the *Arctic*, when she left this port on her last voyage to Liverpool. It simply consists in the use of saturated and surcharged steam combined, in the cylinder of an engine. *Saturated* steam is common steam; *surcharged* steam is steam dispossessed of its moist character, and having a high temperature, hence it is sometimes named superheated steam.

Some years ago, the late James Frost, of Brooklyn, made some experiments with steam heated apart from water, and being led to believe, from the economical results obtained, that common steam entirely changed its character by being so treated, he named it *stame*, hence that term is now sometimes used, and for steam heated in the mode first adopted by him, it should always be so named, —that is steam heated apart from water.



DESCRIPTION OF THE FIGURE:—A is a common steam boiler; B is the side wall of the furnace—part of it being left open. F is a pipe which conducts the common steam from the boiler to the common steam box, D, of the cylinder, E. Another pipe rises at the back of the boiler, enters the smoke pipe, and passes through the furnace, G, from the front end of which it, the pipe, I, passes into the steam box, D. This pipe conveys steam from the boiler which becomes stame (is superheated) while passing through the furnace. It is for the use of these two kinds of steam that the above named patent was obtained, not the apparatus. If there is any economy in this mode of heating steam apart from water, the credit belongs to Mr. Frost. We believe he was mistaken in reference to the change which he supposed took place in the character of steam by being treated in the mode invented by him, and which we saw in operation conducted by himself.

In the experiments which were made with stame and steam on the steamboat *Jos. Johnson*, in this city, last winter, Chief-Engineer Isherwood, U. S. N., in detailing the results in the *Franklin Journal*, stated that there was a saving of sixty-five per cent. in the use of stame alone, over common steam; and a saving of one hundred and six per cent. in using steam and stame combined.

With a strong confidence in the conclusiveness of these results,—and they seemed to afford every security, so far at least as relates to economy in fuel, the Steamship *Arctic*, of the Collins Line, was fitted up to carry the invention into practical use, on her last voyage. Two large pipes were set to conduct the steam through each furnace, so as to super-heat and employ it as illustrated in the above engraving.

Some defect was discovered before the ill-fated *Arctic* proceeded on her voyage, and as the stame pipes could be filled with water, they were so employed, viz: as water tubes running through the furnaces.—Such an arrangement appeared perfectly safe, and was necessary, as the pipes would otherwise have been burned out. Common steam, in its nature, is a practical lubricator, hence we conceive that this is the reason why stame and steam combined produce a better effect than using the former alone.

To Exhibitors.

Those desiring to procure space in the great Exhibition building, now erecting in Paris, will please to make their applications with as little delay as possible. All applications must be in the hands of the Imperial Commission before the 30th of November, or they cannot receive attention, and no intercourse can be had with exhibitors direct—they are required to correspond through the regularly appointed commissioners. The address of the State Commissioner is given in our advertising columns.

Gardner's Oscillating Engines.

The Philadelphia *Ledger* states that an oscillating engine of Morris J. Gardner, of York, Pa. (illustrated on page 44, Vol. 9, SCI. AM.), patented in England and France, was on exhibition at the late State Fair of Pennsylvania, and "was a neat and ingenious machine." This oscillating engine, we consider, is well adapted for marine purposes, and greatly to be preferred over the common kind of oscillating marine engines.

Portable Force Pumps.

Among the many novelties at the State Fair was a small well-made fire engine, which, with six-men power, threw a five-eighth stream of water 125 feet; it was exhibited by the manufacturers, Cowing & Co., Seneca Falls, N. Y., for which they were awarded a silver medal. Price of engine $150. This is just the thing for plantations or small towns, as it will do more than the large machines according to the amount of power applied.

British Association of Science.

This Association has recently held its annual meeting at Liverpool, and in some future numbers we will present the substance of some papers read before it. One good object accomplished by the visit of Lieut. Maury to Europe, in the early part of this year, was the introduction of nautical observations. It seems that representatives of this Association have had interviews with the Board of Trade, and the British Government is organising a department, and has voted $16,000 for the collection of data.

Latest News of the Arctic.

When going to press news had been received that Capt. Luce and 13 others were picked up from a raft and carried to Quebec by the ship *Cambria*. We sincerely hope that we may be able to inform our readers next week of the rescue of a great number more than we have information of at present.

To Correspondents.

We have a number of communications on hand, for which we request correspondents to exercise the virtue of patience; they will receive attention as promptly as we are able to render it.

$570 IN PRIZES.

The Publishers of the SCIENTIFIC AMERICAN offer the following Cash Prizes for the fourteen largest lists of subscribers sent in by the 1st of January, 1855.

$100 will be given for the largest list,	
$75 for the 2nd,	**$35 for the 8th,**
$65 for the 3rd,	**$30 for the 9th,**
$55 for the 4th,	**$25 for the 10th,**
$50 for the 5th,	**$20 for the 11th,**
$45 for the 6th,	**$15 for the 12th,**
$40 for the 7th,	**$10 for the 13th,**
and $5 for the 14th	

The cash will be paid to the order of each successful competitor; and the name, residence, and number of subscribers sent by each will be published in the SCIENTIFIC AMERICAN, in the first number that issues after the 1st of January, so as to avoid mistakes.

Subscriptions can be sent at any time and from any post town. A register will be kept of the number as received, duly credited to the person sending them.

☞ See new Prospectus on the last page.

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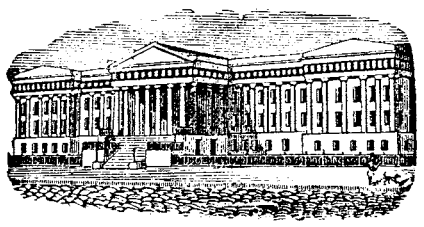

[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office.

FOR THE WEEK ENDING OCTOBER 10, 1854.

RAILROAD CAR SEATS—C. P. Bailey, of Zanesville, Ohio: I do not claim an easy chair having a self-adapting position to the incumbent, as this has been done before. But I claim the so hinging together of the back, seat, and feet rests of a car seat, as that the back may be reversed, and the seat and feet rests swing both ways of a vertical line drawn through their centers, for the purpose of forming a self-adjusting seat, applicable alike to the car, whichever end may go foremost, substantially as set forth.

MACHINERY FOR MAKING HAT BODIES—I. W. Boynton, of South Coventry, Conn.: I claim the method of using the cones by giving them a rotary and a vibratory motion in such a manner as to bring every part of the outer surface of each cone into such a position that each part may receive its due proportion of stock to form a hat body when constructed and made to operate substantially in the manner described.

Second, I also claim the method of varying the direction of the apertures by the vibratory motion of the cones when constructed and made to produce the effect in the manner and by the means substantially as described.

SHINGLE MACHINE—John A. Bradshaw, of Lowell, Mass.: I claim shaving shingles by causing them to pass between the faces of two revolving rims having volute threads cut thereon, and armed with suitable cutters or plane irons, and one of the said cutter rims being so hung as to be self-adapting to the varying thickness of the shingles, substantially as set forth.

SPINNING ROPE AND CORDAGE—Jesse Carpenter, of New York City: I do not claim the principle or process by which Calleu Whipple gives a double twist in spinning vegetable fiber.

But I claim the elevation of the spool above the flyer shafts, so as to occupy the space between the flyer and the ball, whereby the heads of the flyer can be shortened and a greater velocity obtained for the revolution of the flyer, thus increasing the speed of spinning by Whipple's process: and the regulation of the revolution of the spool by means of the friction wheel, whereby the yarn whose draft and twist are governed by the capstan, is wound up as fast as it is delivered, with less tension and with less liability to break, the whole substantially as described.

ROTARY PUMP—S. D. Carpenter, of Madison, Wis.: I claim, first, a machine for pumping and forcing air, water, or other fluid, without the use of the ordinary valves used in pumps on a plan substantially as described.

Second, I also claim the peculiar arrangement of the air chamber, substantially as described, so as to avoid the trouble and expense of affixing a separate appendage for that purpose.

Third, I also claim the peculiar arrangement of the air chamber, substantially as described, and also the application of the fan-shaped bar or "propeller, substantially as described, and also the manner of constructing the outside shell, substantially as described, by which combinations, when operated in the manner described, to dispense with the use of the ordinary valves in pumps, and also to lessen the expense and enhance the durability and efficacy of the pump, and in these respects to render it more available for the uses and purposes set forth than any pump in use.

TURNING HUBS, TOOL HANDLES, &c.—Samuel Carpenter, of Flushing, N. Y.: I do not claim turning, boring, tapering, and shouldering handles, either cylindrical or conical, by means of hollow cutters, tapering cutters, bits, or drills, as none of these devices are new.

But I claim, first, the use or employment of the pulley, so constructed and arranged as to communicate a continuous rotary motion to the stuff to be turned, and to allow the same to be fed freely through its axis at the proper intervals, substantially as described.

Second, the arrangement and combination of the pulleys, screw and worm wheels, levers, and slide, for the purpose of operating the cutters and bit or auger, substantially as specified.

Third, the arrangement of the belt shipper attached to the lever, and the arm attached to the upright, constructed and operating as shown, for the purpose of causing the turned articles to be cut off from the stuff of equal length, as set forth.

CUTTER HEADS FOR PLANING MACHINES, etc.—John D. Dale, of Philadelphia, Pa.: I claim the combination and arrangement of the screw bolts, enclosed in the concentric spaces formed in the heads, and capable of being turned by the hand or otherwise, racks or cogged bars acting as supports and guides to the heads, and movable heads, substantially as set forth.

ROCK DRILL—E. G. Dunham, of Portland Conn.: I claim so arranging a horizontal plate on the drill rod, that by bringing the lifter in contact with it in the manner described, it will be caused to incline slightly during the raising of the drill bar, and consequently to bite or impinge upon said bar and hold it firmly until it is raised to the position desired, and then as the lifter escapes, again assume nearly a horizontal position, quit its hold, and fall with the drill, substantially as set forth.

I also claim rendering the friction plate for raising and dropping the drill bar, capable of removing said bar entirely out of the holes which are drilled, by employing in connection with it, the friction plate which is set inclined, and made to hold the bar as it is gradually raised, substantially as described.

Third, I claim the plate when set inclining sufficiently to hold the drill while it is being raised out of the holes that are drilled, whether it be used in connection with the friction plate, or other arrangements in use for raising the drill bar.

Fourth, I claim increasing the friction of the plate upon the drill bar, and accelerating the descent and blow of the drill bar by means of a spring arranged as described.

MAGNETIC ALARM BELLS—Augustus Eckert, of Trenton, Ohio: I claim combining with the train of mechanism that strikes the alarm an endless screw, driving the toothed wheel and one or more revolving levers, the said endless screw being fixed upon a sliding shaft that carries a brake wheel or disk, so that when the motion of the toothed wheel is arrested by the short arm or detent, 14, catching the levers, 12, the sliding shaft will advance, carrying before it the spring, until the motion of the train is stopped by the disk coming in contact with the brake pieces, and so that on the release of the levers, 13, the force of the spring shall throw the levers, 12, off the detent, 14, and release the disk from the brake pieces, substantially as described.

SEWING PIN—Thaddeus Fowler, of Waterbury, Conn.: I do not claim the emery ball, neither do I claim the screw and jaws, or the pin attached to the back of the ball, separate and alone.

I claim as a new article of manufacture, the emery ball with the pin point fixed in its metallic rim, and provided with the hinged pin and hook by which it is attached to the dress of the user, or to a table cloth, for the purposes set forth and described.

SUGAR MAKING APPARATUS—Louis A. Gossin, of Thibodeaux, La.: I claim, first, the arrangement of the boilers for generating steam, the pans for evaporating the juice, and the furnace, as set forth, whereby a single furnace is made to supply the heat for both the generation of steam and the boiling of sugar through the contact of the naked flame with the bottom of the pans.

Second, the combination of the skimmer described, consisting of a series of scoops, inclined aprons, and conduits, operating as described, with the evaporating pan, substantially as described.

Third, I do not claim to be the inventor of a water jacket or of its application to any other purpose than the pipes of sugar pans. All I claim in reference to it is the combination with the discharge tube of the sugar syrup pan, of a jacke communicating at either side with, and forming a part of the feed pipe of the steam boiler, whereby a stream of water is kept constantly flowing through the jacket, to protect the syrup adhering to the sides of the pipe from being discolored by burning, as described.

RAILROAD CHAIR MACHINERY—B. F. Gossin, of Covington, Ky.. I claim, first, the combination of the semi-circular wheels, pillow blocks, rods, 13, 14, lever, and rod, 15, for giving motion to the crank shafts, and throwing in and out of gear for the purposes mentioned.

Second, I claim the combination of the two crank shafts, the cutters, 10, 10, attached to the said cranks, frame, and cutters, 11, 11, attached to the said frame; all for the purpose of cutting the lips from the blank plate, and turning the same around the mandrel, and thereby forming the complete chair, as mentioned.

Third, I claim the tapering of the two set of cutters, 10 and 11, so as the cutters, 10, 10, will fall freely from the chair, after being completed, for the purpose set forth.

Fourth, I claim the adjustable sliding piece, to which the cutters, 11, 11, are attached by means of bolts, or their mechanical equivalent, the piece is held to its place by the key, and is made so as to adjust the cutters to suit different thicknesses of iron, or to compensate for the wear of the cutters.

Fifth, I claim the table on which the blank chair is laid between the two set of cutters, the upper surface of said table extending up flush with the upper surface of the shaft cutters, and in this case attached to the framing of the machine at its upper part by means of bolts, or to any other part of the machine, that may be desired, and substantially effect the purpose required, all for the purpose set forth.

CONSTRUCTION OF SHIPS—John W. Griffith, of New York City: I claim the method of increasing the strength of ships by vertical plates of iron extending up vertically from the keelson to one or more decks and secured to the keelson and deck and extending the whole length of the ship, substantially as described.

And I also claim giving additional strength to ships by means of longitudinal bulkheads of plate iron, and interposed between the center keelson and the sides of the ship and extending from the side timbers to the deck and secured to them whether made water-tight or of open lattice work, substantially as specified.

BRAKES FOR CHECKING AND STARTING CARS—Robert Grant, of New York City: I claim the application and employment of a spring, spiral, or other similar convenient form, of metal or other suitable material in combination with the axle or wheel, or other running gear of railroad cars or other vehicles, constructed and operating substantially as described and for the purpose of stopping and starting, or either, a car or vehicle, as mentioned.

I also claim the apparatus for winding up or compressing said spring, and causing it to act upon the axle or wheel by means of the fast and revolving clutches with their connections and escapements, substantially as described.

I also claim the employment and application of sectional tubes or washers on the axle or shaft, when used in the said combination, for the purpose of preventing the spring from binding, and to enable the same to be easily and fully compressed.

COMPOUNDS FOR NEUTRALIZING CHLORINE—E. N. Horsford, of Cambridge, Mass. Patented in England May 9th, 1854: I claim the process of neutralizing chlorine by means of the substance described, and called anti-chloride of lime.

PAWL DRILLS—Simon Ingersoll, of New York City: I claim the centerpiece constructed with two gudgeons or pivots or their equivalents, for the wheels to turn upon and to form or support the fulcra of the lever by which the drill is operated, thereby enabling the operator to vibrate the lever in the same plane with the shaft and drill, or in a plane at right angles to it, as may be most convenient, substantially as described.

SAW GUMMER—John Jack, of Fayetteville, Ohio: I am aware that all the devices used in this machine are old, or well known, that they are in common use for various operations of slitting, punching, and shearing metals.

I am aware that the application of a lever working an eccentric directly over the die and plate has been made, patented, and claimed for the purposes of gumming saws, by others, I therefore lay no claim to these devices, nor to their application to gumming saws, nor to the use of the hand lever and eccentric generally, for the purpose of forcing the die into the plate, nor to the friction roller as a means of diminishing friction in the workings of eccentrics for producing pressure, generally this device being already in other use, especially in heavy machines.

But I claim the arrangement of the parts of the machine as set forth, in combination with a short die lever, bearing a friction roller and another hand lever to maneuver an eccentric working on said friction roller as a means of working a hand machine for gumming saws, whereby said machine is rendered more compact, portable, economical, and efficient than any at present known or used.

CANS FOR HOLDING LIQUIDS—Lyman Jennings, of Erving, Mass.: I do not claim the adaptation of a handle to this or any other form of vessel. Neither do I claim making a keg for containing liquids, of wood, as this has been done before.

But I claim as a new article for containing milk and other liquids, the described wooden can having its upper head convex, and being furnished with a handle in the manner described, and for the purpose set forth.

LOOMS—Stephen C. Mendenhall, of Richmond, Ind.: I claim opening the shed by a pattern wheel so arranged with its parts, as that while its rotary motion commences the opening of the shed it shall have a vertically yielding motion to, and with the treddles when combined with a wedge-shaped bar on the lay, arranged to separate the treddles and thus complete the opening of the shed, both the pattern wheel and wedge-shaped bar being moved by the lay, substantially in the manner set forth.

SHINGLE MACHINE—Elijah Morgan, of Morgantown, Va.: I claim the providing of a head block with an oblong straight slot, a zigzag slot, and a fulcrum, and combining the same with an arrangement of mechanism similar to that herein specified, or its equivalent, substantially as and for the purposes set forth.

I also claim the arrangement specified for holding the log, substantially as set forth.

FASTENINGS FOR GARMENTS—Richard Oliver, of New York City: I claim buttons or fastenings for clothes having one end of their eyes hinged or rigidly fastened to the button, making the eye elastic in combination with the cavity or countersink to facilitate the inserting of the other end of the eye into the hole or its equivalent into which it is hooked in closing the eye to fasten the button substantially as described.

MACHINE FOR SPLITTING HORN, &c.—Emerson Prescott, of Leominster, Mass.: I do not claim the carrying of the shell or horn by means of a carriage. Nor the holding the material on the carriage by a thin metallic plate, borne down by a series of vertical pressers, each of which is forced down by a separate spring, so as to act upon the unequal surface of the shell or horn, and make the lower surface even, or nearly so with the surface of the carriage in order that the knife in cutting through the said material may reduce it to an even thickness, and leave a surplus composed of such irregularities.

But I do claim in combination with the movable carriage and the splitting knife, and arranged with respect to them substantially as specified; a single platen press of power sufficient when the shell or horn is softened or rendered expansive by heat to reduce it to a uniform thickness on the carriage as specified, and to preserve it in such state preparatory to and while it may be moved against the splitting knife, as stated.

DAMPER FOR OVENS—John P. Sherwood, of Fort Edward, N. Y.: I claim the arrangement described of the revolving damper, whereby the heat of the oven can be tempered and regulated as specified.

GINNING AND CLEANING COTTON—Cornelius Spear, of New York City: I do not claim the endless belt revolving around two or more rollers furnished with teeth or combs, as described.

But I claim the combination of such endless belt or chain, with the two roller beaters, the said roller beater being placed so as to work directly upon the flat or closed portion of such belt or chain, while its closed teeth holds the fiber, thus performing the whole separating process without the intervention of any other machinery, other than that of feeding and cleaning the machine, as specified.

STEAM ENGINES—Henry Tongue, of Nashville, Tenn.: I claim constructing the piston of a semi-rotary engine with sliding metallic packings in combination with the stop and cylinder, substantially in the manner set forth and for the purposes described.

POLISHING MACHINE—Henry Volkening, of New York City: I do not claim any particular kind or arrangement of polishing machine.

But I claim the application of an elastic substance as cushion between the polishing material and the body to which the same is attached.

TURNING LATHES—Albin Warth, of New York City: I claim the guide levers or their equivalents in combination with the spring slides or their equivalents, and the guide plates or their equivalents arranged and combined substantially as described.

LOCOMOTIVE LAMP—Irvin A. Williams, of Utica, N. Y.: I claim, first, constructing the can with partitions substantially as set forth for preventing the swash of the fluid and insuring a steady feed to the burner.

Second, the combination of the perforated inverted cone, cap, funnel, and perforated tube, constructed, arranged, and operating as herein before set forth for admitting air to the can, and preventing the slopping of oil from the vent.

SMUT MACHINES—Thos. B. Woodward, of Kensington, Pa.: I claim covering the apertures by which the air is discharged from the fan case into the side pipes, with grates to temper and diffuse the blast, prevent the grain from getting into the fan case and being broken by the fans, and retarding the machine by the friction it produces.

CONSTRUCTION OF SUGAR BOILERS—Edward J. Woolsey, of Astoria, N. Y.: I claim an apparatus consisting of a centrifugal distributor arranged within a heated pan or otherwise arranged relatively to heated surfaces which are equivalent to the heated interior surface of the pan, or of the coils contained therein, so as to throw the juice, syrup, or solution to be evaporated in a shower or minutely subdivided state on the said heated surfaces, and allow it to trickle down the sides of the pan or the said heated surfaces, in a thinly diffused state, substantially as set forth, for the purpose of evaporating its moisture.

MANUFACTURE OF SALT—Samuel B. Howd, of Syracuse, N. Y.: (assignor to Thomas F. Davis, James S. Leach, and Richard F. Stevens,) I claim, first, mixing weak with strong brine in the steam chamber of the boiler, for the purpose described, and passing the brine thus mixed into a settling apartment or chamber connected with the lower part of the boiler, and thereby causing the separation and deposit of impurities from the brine before it comes in contact with the fire surface of the boiler, substantially as set forth.

Second, the method described of purifying brine, viz.: by evaporating it in closed boilers to such an extent as to cause the separation and deposit of its impurities while under pressure of steam in combination with vats for crystalizing the salt from the brine thus purified.

RE-ISSUE.

FIRE ARMS—Horace Smith and Daniel B. Wesson, of Norwich, Conn. Originally patented Feb. 14, 1854: We do not claim the employment of a carrier or slide for transferring the cartridge from the magazine to the barrel, nor the employment in combination therewith of a piston or slide to force the cartridge out of the carrier and into the barrel.

Nor do we claim the employment of a piston slide as a breech to the barrel, nor the firing by concussion instead of by percussion.

Nor do we claim the improvement of making or applying the percussion hammer so as to strike on the rear end of a small pin (instead of directly against its cartridge or priming) and so that the priming at the front on lower end of the pin shall be exploded by concussion produced by the percussion blow of the hammer on the other end of it.

But we claim the combining the percussion hammer, the piston slide, and the barrel, so that the said piston slide shall not only serve as a breech to the barrels, but at the same time as a means of conveying (by concussion,) to the priming of the cartridge at one end of the slide, the force of the blow of the hammer upon the opposite end of the slide, as specified.

We also claim the improvement in the carrier whereby it is not only enabled to be moved downward while the breech slide is forward against the barrel or cartridge therein, but is caused to expel from the chamber in which it moves the remainder of the cartridge after such remainder has been retracted by the piston slide and while the carrier is being elevated with another cartridge, the said improvement consisting in making the carrier with an opening or passage leading out of the cartridge chamber thereof, and of a width sufficient for the movement of the piston slide out of the carrier during the descent of the latter, and providing said carrier with one or more projections, or the equivalent thereof, which when the carrier is elevated shall be moved against the remainder of the cartridge and elevate and expel it from the fire arm as stated, the breech slide or piston slide being formed substantially as specified.

We also claim the arrangement and application of the percussion hammer with respect to the breech slide and the trigger guard lever so that the hammer may be moved and set to full cock by the pressure or back action of the slide induced by the action of the trigger guard lever, as specified.

We also claim the improvement of making the front end of piston slide with a dovetail recess, (or its equivalent) for the purpose of enabling the slide to seize the metal or remainder of the cartridge and withdraw it from the barrel when it (the piston slide) is next retracted, the said remainder being discharged from the slide by the upward movement of the carrier, substantially as specified.

CALORIFERES—Saml. Whitmarsh, of Northampton, Mass. Originally patented Aug. 17, 1852: I claim the combination of the water supply reservoir, the chamber or bed of sand and a furnace or chamber of combustion, the whole being made to operate substantially as specified.

NOTE—Several of the patents in the above list were secured through the Scientific American Patent Agency. We invite inventors who have patents to secure to send their sketches to us for examination. We will give them prompt attention.

Robert Fulton.

The Washington *Sentinel* of the 11th inst. publishes a short biography of Fulton, translated from the French, in which it is stated that he was a native of New York. We believe this is a mistake; he was a native of Pennsylvania, but resided for a long period in New York. It is also stated in the sketch that he never knew how to write his own language correctly. This may be true, as his opportunities of obtaining a suitable education in his youthful days were very limited.

After the success of Fulton's steamboat, on the Hudson, he enjoyed the benefits of his discovery in his native land, after having met with many rebuffs from the French and English governments. He was ambitious in contributing to the greatness of his country, not by seeking after political advancement, but in creating commercial power. When urged by his friends upon one occasion to accept a public office, he replied, "there is not at the disposal of the President a single office which it would be pleasing for me to occupy." Fulton died at the age of 48 years, in this city, in 1815, but where he sleeps, we cannot tell, he, however, requires no "animated bust," nor towering shaft for a monument; every steamboat that plows the rivers and lakes, is a monument to his memory, reminding us of his struggles, his inventions, and his triumphs.

Horse Power Applied to Music.

Somebody's foreign correspondent says that a bass viol has been constructed at Vienna, thirteen feet high, provided with pedals to act upon the finger board. This, however, is nothing to the great violin in Germany,—which is so large that it requires two horses to draw the bow, and one stroke produces a sound that vibrates six weeks.—[Churchman.

TO CORRESPONDENTS.

J. T. D., of N. Y.—We have tables relating to the escape of steam through orifices under pressure of the mercury—translations from a French work, but we find them too voluminous for publication. If you were here you could have the use of them.

J. P. D., of Ct.—We do not know of a blower worked on the principle referred to, nor would one work well.

N. C., of N. Y.—The one to whom you refer is still at the same place; we have not heard of his removal.

W. K., of Texas—There is no good work of the kind referred to by you.

A. & A., of Texas—The nuts which you have sent us are rich with oil; of this we have satisfied ourselves. The bushes can be prevented from over wood growth by trimming. A breast wheel, with the head, fall, and quantity of water which you have, will give about twelve horse power. You can communicate with the patentee of the rope machine which appeared in the SCIENTIFIC AMERICAN two weeks ago. The wheel will not drive much cotton machinery.

F. D., of N. J.—We do not know a good wash for outside buildings that would give them a bluish gray and be permanent. Some lampblack mixed with whiting, blue stone, logwood, and a little soda, will make the color, but it is not permanent. The most permanent common wash for outside rough buildings is a cream color, and is made by mixing dissolved copperas with lime wash.

W. R. G., of Ky.—The subject will bear more of your investigation. We never heard it asserted that an increase of attractive force increased the projectile force; none of your essential points are disputed.

E. E., of N. C.—There may be some novelty in your planing machine, but it is impossible to judge without the aid of a sketch and proper description. You have nothing to do with an invention made by one of your workmen, unless you have previously contracted with him for it. The law would not recognize your right under any other conditions.

C. C., of Whitesville—If you had furnished us with the State in which you reside, we should have written you by letter that we could find no novelty in your railroad car coupling.

R. W., of Mass.—The privileges of a caveat consist in the right of the caveator to receive notice of any interfering application which may be filed into the Patent Office for twelve months after the caveat is filed. If neither invention is new no notice is given.

G. F. P., of Ala.—We do not perceive any gain by attaching a reservoir to the old Barker wheel, for retaining a supply of water.

J. P., of Miss.—We think your improvement in steam engines contains novelty, but we cannot discover that it possesses a single advantage over ordinary rotating engines; we consider it is impracticable.

B. C., of Ind.—There is a good chance for you to take one of our prizes; in one day's time, among the mechanics of your place you could procure subscribers enough to pay you handsomely. You will bear in mind that all clubs of over twenty are furnished the paper one year at $1,40; this is certainly low enough for an illustrated paper of 416 pages of useful matter.

W. R., of Canada—The artificial production of ice is as yet an experiment: you have been misinformed in regard to its having been successfully introduced here.

W. C. R., of S. C.—Your method of applying power to cranks for turning paddle wheels, is not new, neither do we think it worthy of your further investigation.

C. C., of Fla.—Chloride of lime will remove the disagreeable smell from the water, but it will taste of chlorine. By passing the water through pulverized charcoal it will purify it.

D. P. A., of Ohio—There is a small work named the *Turner's Companion*, published by H. C. Baird, Philadelphia: the price we believe is one dollar. It may be very useful for you, as it is very well illustrated. We are not acquainted with one on carving. There is a large work on Turning, published in London, the price of which is ten dollars a volume.

C. G., of California—Bellows, secured to a crank shaft, and driven by an engine, were used before fan-blowers. The blower is more compact, and can be made at less cost.

M. W., of Pa.—We cannot at present give you a description of the Maynooth Battery, but we will endeavor to obtain it, and will let you know if we do.

S. C., of Tenn.—About one pound of alum and the same of sulphate of copper, will answer for forty of water; steep the timber for about three days, then take it out and dry it thoroughly.

L. U., of D. C.—We continue to receive letters from unknown correspondents, asking all sorts of questions, and to which we never make any reply; neither do we preserve such letters, as they cannot be intelligibly filed for future reference. Correspondents should always furnish their address. It will be kept confidential if so desired.

D. E., of Va.—Paper, vellum, silk, etc., are readily gilt by various sizes, for which there are many receipts. Gum arabic mixed with sugar, or ale in which honey has been boiled mixed with a little gum arabic, are old receipts. As they are transparent and colorless, they should be tinted a little with carmine, so as to determine where to lay on the gold or silver leaf.

B. A., of Ky.—Your method of preparing hydraulic cements is the same as is described in the *Bulletin of Sciences*, 1828. The proportions vary so little that it is scarcely worth noticing, and we perceive no chance for a patent on it.

S. C., of N. Y.—Send us a sketch and description of your invention. We think it is a good thing. The patent fee is $30. Our fee for preparing the case would be reasonable.

E. C. C., of Mo.—In our last volume we gave an account of the best article used in the preservation of birds. It is a great art, and requires scientific study. In ornithology as in sculpture, genius is necessary, and all the published treatises on the subject would be wasted without its co-operating aid.

A. P., of Ct.—The merest mechanical tyro ought to know better than to suppose a spring coiled up by winding is capable of giving out any more power than what is applied to it in winding. Think of this idea a moment and ask yourself where the extra power comes from, and you will have solved the difficulty.

J. E., of Mass.—There does not seem to be the slightest chance for a patent on your washing machines. Reed's patent issued as long ago as 1829 contains the same features.

E. A., of R. I.—A double rack formed by teeth within the two sides of an oblong frame, and a pinion with which the racks are alternately to engage and disengage, is an old invention. It was patented in this country more that twenty years ago.

J. C., of Pa.—A good treatise on millwrighting is much wanted at present; we cannot recommend any to you. What is called Glenfield starch receives a high character, but the clear glassy appearance of linen to which you refer, is not so much owing to the starch as the laundresses skill.

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A., of Ct.—We cannot make replies to letters not signed, by the writer.

E. B. C., of Pa.—It is not safe to delay an application for a patent after your invention is completed. The first thing to be done is to construct a small compact model, send this to us by express, together with the patent fee, $30, and we will prepare your case without delay. Patents are granted to original inventors only. We will make out the petition and oath. We are well acquainted with Mr. S. mentioned.

S. M. V. W., of S. C.—You can procure the Calculation Companion of J. W. Moore, Philadelphia. See notice in No. 3 SCIENTIFIC AMERICAN.

C. N. W., of N. C.—Barrel machinery is made by C. B. Hutchinson and Co. See advertisement in another column

J. D., of —.—Scientific facts not generally known, are acceptable, provided they are interesting. We intend to notice none other.

L. J. W., of N. J.—Your patent was mailed to your address at the Patent Office, and we presume you will find it in the Paterson Office. We had no authority to receive it.

L. U., of Iowa—Your model is received. It is strong and substantial as all models always should be, to bear the necessary amount of handling to which they are exposed.

J. A.—Cement curbing for wells is no new idea. We have a model in sections of the same thing now in our office.

John R. Beale, Cooksville, Miss.—Wishes to gain information in regard to the best well boring instruments in use.

D. R., of Ohio—In volume six of the SCIENTIFIC AMERICAN, you will find an engraving of the "Static Pressure Engine," together with our remarks upon it. It amounted to about as near nothing as those luminous appearances called "will o'the wisp." There are "fairy tales" in invention as well as in literature.

N. G., of N. Y.—If you could get hold of Rennie's Experiments on friction, you would get all the information you want. You can examine them by calling upon us. Your ideas about mowing machines are not new, we shall publish an engraving in a few weeks, of the same thing.

M. O. R., of Mo.—Apply heat, and pressure about steam heat will answer—but it is very difficult to cement vulcanized india rubber.

W. F. D., of Mass.—Your improved needle, as far as we know, is new.

Money received on account of Patent Office business for the week ending Saturday, Oct. 14 :—

K. & H., of Del., $30; C. W. W., of N. Y., $35; J. D., of Pa., $25; G. B. C., of N. Y., $10; J. W. P., of Mich., $55; I. C. C., of N. Y., $30; J. M., of N. Y., $30; G. W. S., of N. J., $0; J. S. A., of N. Y., $30; J. F., of Pa., $20; W. H. B., of Ind., $10; J. S. W., of Ala., $50; S. R. S., of Mass., $60; J. R., of N. Y., $32; W. D. T., of L. I., $55; W. W. C., of N. J., $25; J. C. E., of Ct., $15: L. B., of N. Y., $30; G. M., of R. I., $27.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Oct. 14:—

J. D., of Pa.; W. W. C., of N. J.; C. W. W., of N. Y.; E. M., of Pa.; W. H. M., of Ky.; G. W. S., of N. J.; W. D. T., of N. Y.; J. C. E., of Ct.; L. B., of N. Y.; G. M., of R. I.

Terms of Advertising.

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16 "	" "	4,00

Advertisements exceeding 16 lines cannot be admitted, neither can engravings be inserted in the advertising columns at any price.

☞ Al advertisements must be paid for before inserting.

American and Foreign Patent Agency.

IMPORTANT TO INVENTORS.—MESSRS. MUNN & CO., Publishers and Proprietors of the SCIENTIFIC AMERICAN, continue to prepare specifications and drawings, and attend to procuring patents for new inventions in the United States, Great Britain, France, Belgium, Holland, Austria, Spain, etc., etc. We have constantly employed under our personal supervision a competent board of Scientific Examiners, which enables us to despatch with great facility a very large amount of business. Inventors are reminded that all matter intrusted to our care are strictly confidential, and hence it is unnecessary for them to incur the expense of attending in person. They should first send us a sketch and description of the invention, and we will carefully examine it, state our opinion, and the expense of making an application, if deemed new and worthy of it. Models and fees can be sent with safety from any part of the country by express. In this respect New York is more accessible than any other city in our country. Circulars of information will be sent free of postage to any one wishing to learn the preliminary steps toward making an application.

Having Agents located in the chief cities of Europe, our facilities for obtaining Foreign Patents are unequalled. This branch of our business receives the especial attention of one of the members of the firm, who is prepared to advise with inventors and manufacturers at al times, relating to Foreign Patents.

It is very important that trustworthy and competent agents should be employed in securing patents, as great care is necessary in the preparation of the papers, as well as integrity in taking proper care of the case until the inventor is duly invested with his legal rights. Parties intrusting their business in our hands can rely upon prompt and faithful attention. Most of the patents obtained by Americans in foreign countries are secured through us; while it is well known that the largest proportion of patents applied for in the U. S., go through our agency.

The offices of Messrs. Munn & Co.'s American and Foreign Patent Agency are at 128 Fulton Street, New York; London, No. 16 Castle st.; Paris, No. 29 Boulevard St. Martin; Brussels, No. 6 Rue D'Or.

TO EXHIBITORS—All applications for space to exhibit in the French Palace of Industry, in 1855, should be addressed to the undersigned before the 15th of November next.

S. H. WALES,
Commissioner for the State of New York.
Office Scientific American, New York City.

DICTIONNAIRE TECHNOLOGIQUE Francais-Anglais-Allemand, redige d'apres les meilleurs ouvrages speciaux des trois langues, donnant avec leurs diverses acceptions et applications, tous les termes techniques employes dans les arts industriels et dans la mecanique, la physique et la chimie manufacturieres; suivi d'un tableau comparatif des monnaies, poids et mesures, Francais, Anglais, et Allemands. Par MM. Tolhausen et Gardissal. New York, chez MUNN et CIE, 128 Fulton Street. Prix, $1,31

FOR SALE—A Hydro-Qxygen Microscope of Spencer's manufacture, with three lenses—1-4, 1-2 and 2 inch focus, with Drummond light apparatus, and specimens, complete, suitable for Colleges, Schools, or Exhibition purposes. Warranted equal to any in use. Inquire of JOHN ROACH, Optician, 111 Fulton st. 1*

THE STAIR BUILDERS' GUIDE—By Cupper, now ready; price $6. By remitting, the book will be sent by mail or express to any part of Canada or the United States. W. GOWAN, 178 Fulton street. 53*

THE NEW BRICK MACHINE—Is now in daily operation at my yard, on Locust Point. If driven by steam, the clay is taken from the bank, passed through a pulverizer (which removes the stone) into the soak pit where it receives the water, thence to the machine, which is geared to make six and a half revolutions per minute, turning out five bricks each time, or 1,760 bricks an hour, including contingencies. Nine men and six boys, all common laborers, take the clay from the pit and place the bricks on the floor. If there be no stone the pulverizer is not required; the clay is then thrown into the pit, mixed with water, and after remaining all night is ready for use. Machine, $425: Pulverizer, $75, with right to work it. FRANCIS H. SMITH, Baltimore, Md. 1*

OIL! OIL! OIL!—For railroads, steamers, and for machinery and burning—Pease's Improved Machinery and Burning Oil will save fifty per cent., and will not gum. This oil possesses qualities vitally essential for lubricating and burning, and found in no other oil. It is offered to the public upon the most reliable, thorough, and practical test. Our most skillful engineers and machinists pronounce it superior and cheaper than any other, and the only oil that is in all cases reliable and will not gum. The Scientific American, after several tests, pronounced it "superior to any other they have ever used for machinery." For sale only by the inventor and manufacturer,

T. S. PEASE, 61 Main st., Buffalo, N. Y.

N. B.—Reliable orders filled for any part of the United States and Europe. 6tf

HYDRAULIC RAMS—The undersigned calls the attention of citizens of towns, railroad companies, plumbers, farmers, &c., to his improved Rams. He has patented two improved modes of arranging the puppet valve chamber, and an improved method of laying the driving pipe, by which he raises a greatly increased per centage of water over ordinary Rams. He is prepared to dispose on reasonable terms of rights to erect and sell rams manufactured under his patent, either for cities, counties, States, or for single Rams, and will undertake to furnish complete practical instructions for laying out the proper curve for driving pipes. If desired he will also furnish estimates of the quantity of water which he will guarantee to raise with one of his rams, based upon the following data, viz., fall of water, elevation of reservoir, distance of Ram from source and place of delivery, and the quantity of water furnished by the stream per minute. Persons wishing to purchase rights or obtain further information, will address

1* J. C. STRODE, Philadelphia Post Office.

IRON ORE BANK FOR SALE—Situated on the Point of Rocks, Loudoun county, Virginia, about a mile from the Potomac river, Chesapeake and Ohio Canal, and Baltimore and Ohio Railroad, and on the same ridge with the mine of Mr. O. Hern. The ore is superior Hermotite, and is exposed thirty feet without coming to the bottom, and may be considered inexhaustible. sixty acres: price $20,000. H. W. ELLICOTT & BRO.,
1 Baltimore, Md.

THE NEW BRICK MACHINE—If driven by a horse the clay is thrown into heaps, and each successive layer saturated; after remaining in soak all night it is shovelled into the machine. They were formerly built of two sizes, four and five mold. By a recent improvement the speed of the shaft is increased without changing the gait of the horse, and thus the smaller size can make 1000 bricks per hour, worked by four men and four boys. It is liable to no accident except from stone, which is apt to break a mold. Price $275. For further particulars in a pamphlet containing full instructions on brick burning address FRANCIS H. SMITH, Baltimore, Md. 1*

YOU CAN GET THE NEW YORK WEEKLY SUN three months for 25 cts.; six months 50 cts.; one year, 75 cents, 16 months, $1. Or three copies one year, $2; eight copies $5; twenty-five copies $15; and by canvassing for subscribers you may get one of the five cash prizes $50, $20, $15, $10, and $5—for the largest lists sent in before 3rd Feb.—Specimen copies gratis.—Send letters and money (post-paid) to MOSESS. BEACH, Sun Office, New York. 6

TO CAPITALISTS AND MANUFACTURERS—The New York Cast Steel Works, corner Second Avenue and 47th street, are for sale or to let, affording a desirable opportunity for those desiring to engage in the business. Address or call on DANIEL ADEE, Agent, 107 Fulton st., N. Y.

Steam Engines for sale, cheap for cash, one of six-horse power, and one of two-horse power. Apply as above. 64

COTTON AND WOOLEN MANUFACTURERS' Supplies of every description; also machinery of all kinds; wrought-iron Tackle Blocks of all sizes; Leather Belting superior oak tanned; Bolts, Nuts, and Washers of all sizes on the most reasonable terms.
6 13* SAML. B. LEACH, 51 Broad st.

MECHANICS' ROOMS, WITH STEAM POWER, to Rent, in Cleveland, Ohio—The undersigned has just erected a large three story brick building, tin roofed, two hundred feet long, and one hundred feet wide, and to be furnished with two large steam engines expressly designed for the growing mechanical wants of this vicinity. The apartments will be divided and power rented, to suit the wants of tenants. The location is central, conspicuous, and convenient to canal, railroads and lake shipping. Few mechanics or manufacturers are aware of the vast number of articles which are used in immense quantities in the Western States, which have been hitherto wholly manufactured in the Eastern States and which may be made here to better advantage. The premises will be ready for occupation early this fall. For further information apply to J. L. HEWITT, Cleveland, Ohio. 55

GREAT AUCTION SALE OF MACHINISTS' TOOLS—JOHN PARSHLEY will sell at Auction, on Wednesday the 8th day of November, 1854, at his shop, in New Haven Conn., 75 Engine Lathes of all sizes, 12 Bolt Cutting Machines, a number of Drill Presses and 12 Iron Planers, all of which tools are built in the best workman-like manner, and can be seen on or before the day of sale. Circulars giving all required information, and cuts of tools, will be sent to all post paid applicants. 5 8

GLOVER'S DOUBLE-POINTED SPRING-CASE P N—Patented Augus, 1854. (See engravings in the Scientific American, No. 4, Vol. 10.) Territory for sale by W. R. GLOVER, Glasgow, Ky. 56*

WARREN'S TURBINE WATER WHEEL.—Manufactured at the Wareham Manufacturing Company's Works, Wareham, Mass. These Wheels are now in extensive use in New England, and are constructed in the best possible form for using water with the greatest economy. They are equally adapted to all manufacturing purposes, and under all heads, and not affected by back-water. For particulars, certificates, &c., address JACKSON WARREN, Wareham, Mass. 55*

I AM PREPARED TO SELL Lyon's Copper Lightning Rod, (illustrated in No. 5 present volume of the Sci. Am.,) for the States of New York, Pennsylvania, and Ohio; price per foot, all ready to put up, including glass insulators and electroplated or gilded points, sixteen cents; any party buying several hundred feet of us, at the above price, will be entitled to the exclusive right to sell the rod in the town where such rod is used, also a liberal deduction on all rod purchased thereafter. All orders for rod or otherwise must be sent directly to the subscriber, where the rod will be boxed and delivered. J. P. LINDSAY, No. 4 North Market street, Boston, Mass. 54

WIRE ROPE OF IRON AND COPPER—For Mines, Inclined Planes, Hoisting and Steering purposes, Stays or Braces, &c., &c., much safer and far more durable than the best hemp or hyde ropes. Also for Sash Weights, Dumb Waiters, Lightning Conductors, &c. CHARLES W. COPELAND, No. 64 Broadway. 53m

ESTABLISHED IN 1796—Philosophical, Mathematical, and Optical Instruments. Our priced and illustrated Catalogue furnished on application, and sent by mail free of charge. McALLISTER & BROTHER, Opticians, 48 Chesnut st., Philadelphia. 36*

UNITED STATES PATENT OFFICE,
Washington, September 28, 1854.

ON THE PETITION of Caroline S. Williams, administratrix of Thos. R. Williams, deceased, of Moreau Station, New York praying for the extension of a patent granted to the said Thos. R. Williams, on the 14th of December, 1840, for an improvement in the "machinery for forming bats for felting," &c., for seven years from the expiration of said patent, which takes place on the 14th day of December, 1854:

It is ordered that the said petition be heard at the Patent Office on Monday, the 27th of November next, at 12 o'clock M., and all persons are notified to appear and show cause, if any they have, why said petition ought not to be granted.

Persons opposing the extension are required to file in the Patent Office their objections, specially set forth in writing, at least twenty days from the day of hearing. All testimony filed by either party to be used at the said hearing must be taken and transmitted in accordance with the rules of the Office, which will be furnished on application.

The testimony in the case will be closed on the 17th of November; depositions and other papers relied upon as testimony must be filed in the office on or before the morning of that day; the arguments, if any, within ten days thereafter.

Ordered, also, that this notice be published in the Union, Intelligencer, and Evening Star, Washington, D. C.; Evening Argus, Philadelphia, Penn.; Scientific American, N. Y.; Post, Boston, Mass., and Daily Courier, Buffalo, N. Y., once a week for three successive weeks previous to the 27th of November next, the day of hearing.

CHARLES MASON,
Commissioner of Patents.

P. S. Editors of the above papers will please copy and send their bills to the Patent Office, with a paper containing this notice. 63

UNITED STATES PATENT OFFICE,
Washington, September 28, 1854.

ON THE PETITION of Caroline S. Williams, administratrix of Thomas R. Williams, deceased, of Moreau Station, New York, praying for the extension of a patent granted to the said Thomas R. Williams, on the 14th day of December, 1840, for an improvement in "machinery for hardening bats in felting," &c., for seven years from the expiration of said patent, which takes place on the 14th day of December, 1854:

It is ordered that the said petition be heard at the Patent Office on Monday the 27th day of November next, at 12 o'clock, M.; and all persons are notified to appear and show cause, if any they have, why said petition ought not to be granted.

Persons opposing the extension are required to file in the Patent Office their objections, specially set forth in writing, at least twenty days before the day of hearing; all testimony filed by either party to be used at the said hearing must be taken and transmitted in accordance with the rules of the office, which will be furnished on application.

The testimony in the case will be closed on the 17th day of November 1854; depositions and other papers relied upon as testimony must be filed in the office on or before the morning of that day; the arguments, if any, within ten days thereafter.

Ordered, also, that this notice be published in the Union, Intelligencer, and Evening Star, Washington, D. C.; Evening Argus, Philadelphia, Penn.; Scientific American, New York; and Post, Boston, Mass., and Daily Courier, Buffalo, N. Y., once a week for three successive weeks previous to the 27th day of November next, the day of hearing.

CHARLES MASON,
Commissioner of Patents.

P. S. Editors of the above papers will please copy and send their bills to the Patent Office, with a paper containing this notice. 63

UNITED STATES PATENT OFFICE,
Washington, September 19, 1854.

ON THE PETITION of Aaron D. Crane, of Newark, New Jersey, praying for the extension of a patent granted to him on the 10th February, 1841, ante-dated 23d December, 1840, for an improvement in "the method of constructing clocks," for seven years from the expiration of said patent, which takes place on the 22nd day of December, 1854—

It is ordered that the said petition be heard at the Patent Office, on Monday, the 4th of December next, at 12 o'clock, M.; and all persons are notified to appear and show cause, if any they have, why said petition ought not to be granted.

Persons opposing the extension are required to file in the Patent Office their objections, specially set forth in writing, at least twenty days before the day of hearing; all testimony filed by either party to be used at the said hearing must be taken and transmitted in accordance with the rules of the office, which will be furnished on application.

The testimony in the case will be closed on the 24th of Dec.: depositions, and other papers relied upon as testimony, must be filed in the office on or before the morning of that day; the arguments, if any, within ten days thereafter.

Ordered, also, that this notice be published in the Union, Intelligencer, and Evening Star, Washington, D. C.; Pennsylvanian, Philadelphia, Pa.; Scientific American, New York, and Post, Boston, Massachusetts, once a week for three successive weeks previous to the 4th day of Dec. next, the day of hearing.

CHARLES MASON,
Commissioner of Patents.

P. S.—Editors of the above papers will please copy and send their bills to the Patent Office, with a paper containing this notice. 43

NEW HAVEN MANUFACTURING COMPANY Machinists' Tools. Iron planers and Engine Lathes of all sizes. Hand Lathes, Gear Cutters, Drills, Bolt Cutters, Chucks, &c., on hand and being built by the quantity, which enables us to sell low. For cuts giving full description and prices, address New Haven Manufacturing Co., New Haven, Conn. 1 tf

PATENT DRIERS—Zinc Driers, Graining Colors, Stove Polish, Gold Size, &c., &c., 114 John street, New York. QUARTERMAN & SON, Manufacturers. 16m

STAVE AND BARREL MACHINERY—Hutchinson's Patent. This machinery which received the highest award at the Crystal Palace, is now in daily operation there. Staves, heading, &c., prepared by it are worth to the cooper 20 to 40 per cent. more than when finished in any other way. Special attention is invited to the improved Stave Jointer. Apply to C. B. HUTCHINSON & CO., Crystal Palace, or Auburn, N. Y. 1 tf

RENSSELEAR POLYTECHNIC INSTITUTE—Designed for the education of Architects and Civil Engineers, including Railway, Hydraulic, Topographical, and Mining Engineers. For copies of the Annual Register, giving full information respecting the Institute, apply to B. FRANKLIN GREEN, Director, etc., R. P. I., Troy, N. Y. 18*

TO IRON FOUNDERS—Scotch and American Pig Iron. English Sheet Iron and Boiler Plates. Fire Bricks, Clay and Sand, and all kinds of Iron Founders' Facing Materials for sale by G. O. ROBERTSON, 135 Water street, (corner of Pine) New York. 16*

THE TRUMBULL IRON WORKS—located in the town of Stonington, Conn., manufacture a superior article in the way of Machinists' Tools—they particularly call the attention of those in want of Planing Machines and Gear Cutters, offering a guarantee the same cannot be excelled in any establishment in this country. All articles delivered at the Company's Docks or Railroad Depot, free of expense. 4 tf

STEAM ENGINES AND BOILERS FOR SALE.—One new eight-horse engine. One second hand five-horse engine. Tubular boilers, second-hand, suitable for same. One second-hand two horse portable engine and boiler. THOS. PROSSER & SON, 28 Platt street, 4tf

WOODWORTH'S PATENT Planing, Tonguing Grooving Machines—Double machines plane both sides, tongue, and groove at one and the same time, saving one half of the time when lumber is required to be planed on both sides. Large assortment constantly on hand. Warranted to give entire satisfaction to purchasers. JOHN H. LESTER,
46* 57 Pearl st., Brooklyn, L. I.

IRVING'S PATENT SAFETY CIRCULATING STEAM BOILER—For Stationary, Locomotive, and Marine Engines. These Boilers having been thoroughly tested by scientific experiment and practical use, are being rapidly introduced into every part of the United States. Their claims to superiority are fully supported by the united testimony of highly respectable parties, who have given them the most successful trials. The following are among the chief advantages of this Boiler: 1st. Great increase of heating surface, with diminution of bulk. 2nd, Economy of fuel—a saving of more than 50 per cent. being effected over other boilers. 3rd. Economy of space, compactness, and strength of form. 4th. Increased safety from explosion. 5th. Freedom from incrustation. Circulars obtained on application at the Company's Office. Boilers of any required power furnished on short notice. Rights negotiated for all parts of the United Staies, England, France, and Belgium.—All communications promptly attended to.

W. F. PHELPS,
45 3m* Sec'y Irving S. Boiler Co., 347 Broadway, N. Y.

KENTUCKY LOCOMOTIVE WORKS—Corner of Kentucky and Tenth streets, Louisville, Ky.—The proprietors of the Kentucky Locomotive Works would respectfully inform Railroad Companies and the public generally, that, having completed their establishment, they are now prepared to receive and execute orders with fidelity and dispatch. They will contract for Locomotives, Passenger, Baggage, Freight, Gravel, and Hand Cars, of every style and pattern, as well as all kinds of Stock and Machinery required for railroads.—Particular attention will be paid to Repairing, for which they have every facility. They are also prepared to contract on favorable terms for building all kinds of Machine Tools, such as Turning Engines, Laths, Planers, Drills, Slotting, Splining, and Shaping Machines of every variety of pattern. Having also a large Foundry connected with the establishment, orders for castings are solicited, and will be filled with promptness. Car Wheels of any pattern can be furnished on short notice. Double and single plate and Spoke Wheels of all sizes constantly on hand. Communications or orders must be addressed to OLMSTED, TENNEYS & PECK, Louisville, Ky. 40 6m*

MECHANICAL ENGINEERING—CHARLES EHMAN & CO., Consulting Engineers and Designers, 333 Broadway, New York. Designs, Working Drawings, estimates and contracts for high or low pressure steam engines (Ehman's improved vertical engine) Boilers, Pumps, Presses, Saw and Grist Mills, Tools and Machinery of every description. Particular attention paid to making drawings and working plans for inventions and models, to the construction of patent machines, etc., etc. Arrangements made, and plans furnished for putting up and locating Engines, Boilers, Shaftings, and all kinds of machinery in buildings, etc., etc. 51 8*

REYNOLD'S DIRECT ACTION and Re-Action Water Wheel—This is one of the most simple, cheap, and efficient Iron Water Wheels now in use. For description, cuts, &c., apply to SAML. B. LEACH, Agent, 60 Beaver st., N. Y. 45 13*

JOHN PARSHLEY, manufaeturer of machinist's tools, No. 5 and 7 Howard street, New Haven, Ct., is now finishing a lot of iron planers to plane 8 5-12 feet long, 30 in. wide, and 26 in. high, having the down and angle feed in the cross head, the planers all of the best quality, and prices extremely low for the quality. Cuts with full particulars can be had by addressing as above, post-paid. 1 tf

A. B. ELY, Counsellor at Law, 52 Washington st., Boston, will give particular attention to Patent Cases. Refers to Messrs. Munn & Co., Scientific American. 16 1y*

HARRISON'S GRAIN MILLS—Latest Patent.—$1000 reward offered by the patentee for their equal. A supply constantly on hand. Liberal Commissions paid to agents. For further information address New Haven Manufacturing Co., New Haven, Conn., or to S. C. HILLS, our agent, 12 Platt Street, New York. 1 tf

NEW PATENT FLOUR AND GRAIN MILL—Patented June 6th, 1854. The subscriber is finishing the following mills: 8 twenty inch, price $100; 6 thirty inch, $200; 3 three feet, $300; 2 four feet, $400, and will pay $1,000 for any other mill as durable, simple, economical of power, which will grind as much from one dressing, which will heat the flour and meal as little, and is as easily kept in order. Cuts sent to post-paid applications, and liberal commissions allowed to agents for cash orders. EDWARD HARRISON, New Haven, Conn., July 24th, sole owner of all interest in the patent right. 50 9*

ENGINEERING—The undersigned is prepared to furnish specifications, estimates, plans in general or detail of steamships, steamboats, propellers, high and low pressure engines, boilers and machinery of every description. Broker in steam vessels, machinery, boilers, &c. General Agent for Ashcroft's Steam and Vacuum Gauges, Allen & Noyes' Metallic Self-adjusting Conical Packing, Faber's Water Gauge, Sewell's Salinometers, Dudgeon's Hydraulic Lifting Press, Roebling's Patent Wire Rope for hoisting and steering purposes, etc.

CHARLES W. COPELAND,
1 tf Consulting Engineer, 64 Broadway.

THE MERIDEN MACHINE CO.—Successors to Oliver Snow & Co., West Meriden, Conn. Have on hand and make to order a great varlety of Lathes, Planers, and other machinists tools of superior quality and finish. Cuts of these tools may be had on application as above, with full particulars. They also manufacture Farnam's Patent Lift and Force Pumps of all sizes. For mines, factories, railroad stations, &c. Having a large and extensive variety of patterns, the accumulation of over 20 years business, and extensive facilities for making light or heavy castings, are prepared to contract for any kind of mill work, mining machinery, &c. New York Office and Sample Room, No. 15 Gold, cor. Platt st. 1 3m*

PHŒNIX IRON WORKS—GEO. S. LINCOLN & CO., Hartford, Conn. Manufacturers of Machinists Tools. Are constantly making and have now on hand an assortment of Screw Cutting Engine Lathes, viz.:—No. 1. bed 10 ft. long, swing 20 inch. No. 2. bed 14 ft. long, swing 30 inches. No. 3. bed 16 1-2 ft long, swing 40 inches, with improved bed, cast steel spindles, feed motion carried by a screw, toothed rack for moving tool rest by hand, improved gibb rest and tool stock, stationary and traveling back rest; also manufacturers of Lathes for turning Locomotive Driving Wheels, small Power Planers, Upright Drills, Power Punching Presses, &c. Designs of the tools with further descriptions, will be sent by addressing as above. 1 3m*

ENGINEERS, DRAUGHTSMEN, AND MECHANICS supplied with Drawing Instruments, separate and in cases. Parallel Rules, Scales, Dividers, Metallic Tape Measures. Linen do., Chains, Surveyors' Compasses, Levels and Transits, and a large assortment of Optical and Mathematical Instruments, wholesale and retail by JAS. W. QUEEN, of the late firm of McAllister & Co., 264 Chesnut st., Philadelphia. Illustrated catalogues gratis by mail. 3 3m*

NORTHVILLE MACHINE WORKS—Manufactory of Machinists Tools, consisting of Engine Lathes, Power Planers, Hand Lathes, Engine Lathe for turning chair stuff, all of the most improved patterns and quality of workmanship. Worcester, Northville, Mass., August 9, 1854. TAFT & GLEASON. 50 1y*

NORCROSS' ROTARY PLANING MACHINE—The Supreme Court of the U. S., at the Term of 1853 and 1854, having decided that the patent granted to Nicholas G. Norcross, of date Feb. 12, 1850, for a Rotary Planing Machine for Planing Boards and Planks, is not an infringement of the Woodworth Patent.

Rights to use N. G. Norcross's patented machine can be purchased on application to N. G. NORCROSS,
208 Broadway, New York.

The printed report of the case with the opinion of the Court can be had of Mr. Norcross, at Lowell, or 27 State street, Boston. 36 6m*

MACHINISTS TOOLS—SHRIVER & BROS., Cumberland, Md., (on B. and O. Railroad, midway between Baltimore and the Ohio River,) manufacturers of Lathes, Iron Planers, Drills and other machinists tools 50 6m*

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Science and Art.

The Magnet and Cold.

History informs us that many of the countries of Europe which now possess very mild winters, at one time experienced severe cold during this season of the year. The Tiber at Rome was often frozen over, and snow at one time lay for forty days in that city. The Euxine sea was frozen over every winter during the time of Ovid, and the rivers Rhine and Rhone used to be frozen so deep that the ice sustained loaded wagons. The waters of the Tiber, Rhine, and Rhone, now flow freely every winter; ice is unknown in Rome, and the waves of the Euxine dash their wintry foam uncrystalized upon the rocks. Some have ascribed these climatic changes to agriculture; the cutting down of dense forests, the exposure of the upturned soil to the summer's sun, and the draining of great marshes. We do not believe that such great changes could have been produced on the climate of any country by agriculture, and we are certain that no such theory can account for the contrary change of climate—from warm to cold winters—which history tells us has taken place in other countries than those named.—Greenland received its name from the emerald herbage which once clothed its valleys and mountains, and its east coast, which is now inaccessible on account of perpetual ice heaped upon its shores, was, in the eleventh century, the seat of flourishing Scandinavian colonies, all trace of which is now lost. Cold Labrador was named Vinlaud by the Northmen who visited it in A. D. 1000, and were charmed with its then mild climate. The cause of these changes is an important inquiry. A pamphlet by John Murray, Civil Engineer, has recently been published in London, in which he endeavors to account for these changes of climate to the changeable position of the magnetic poles. The magnetic variation or declination of the needle is well known. At the present time it amounts in London to about 23° west of north, while in 1659 the line of no variation passed through England, and then moved gradually west until 1816. In that year a great removal of ice took place on the coast of Greenland hence, it is inferred that the cold meridian which now passes through Canada and Siberia, may at one time have passed through Italy; and that if the magnetic meridian returns, as it is now doing, to its old lines in Europe, Rome may once more see her Tiber frozen over, and the merry Rhinelander drive his team on the ice of his classic river.—Whether the changes of climate mentioned have been caused by the change of the magnetic meridian or not, we have too few facts before us at present, to decide, conclusively; but the idea once spread abroad, will soon lead to such investigation as will no doubt remove every obscurity, and settle the question.

Ohio Coal.

We learn by the Cincinnati *Railroad Record* that no less than 23,800,000 bush. are dug yearly from the Ohio coal field. The price is 12½ cents per bushel, and is cheaper for fuel than wood at $5 per cord. The Ohio coal field embraces an area of 12,000 square miles, and is really more valuable than the same extent of gold. This coal field is bituminous, and no doubt there are different qualities of it, so that it will furnish gas for illumination and fire for heating and manufacturing purposes. The *Record* asserts, that steam mills are more economical in that State than water mills, and that steam flouring mills have rapidly sprung up near the railway depots, where the handling of wheat, coal, and flour is so easily performed. Ohio is certainly a State full of natural resources.

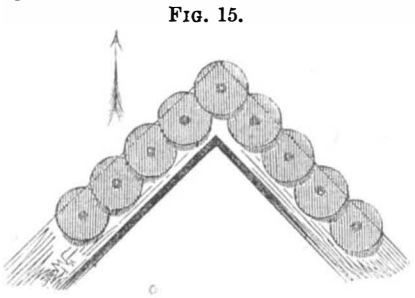
Immense Fields of Gypsum.

The Fort Smith (Ark.) *Herald* publishes a letter from Dr. Shumard, of Capt. Marcy's expedition, which had reached the head waters of the river Brazos, and had discovered immense fields of gypsum, and inexhaustible quantities of gum arabic. One field of gypsum has a thickness of 700 feet. The country was barren for agricultural purposes, and the waters very bitter.

History of Reaping Machines.—No. 4.

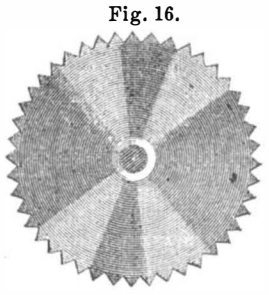
There was a third reaping machine patented in 1811. The invention of Donald Cumming, of Northumberland. The cutting principle in this machine consists of a series of circular cutters, continuously advancing, revolving toward each other, illustrated by figure 15.

Fig. 15.



In 1814, James Dobbs, of Birmingham, a dramatist, procured a patent on a reaping machine, which he exhibited in practical operation upon the stage of the theatre. Its cutting apparatus varied from those of a circular form already described, only in possessing a serrated edge, like a saw plate fig. 16.

Fig. 16.



Dobbs was a queer genius; the most mirth-provoking fellow of the whole craft of reaper inventors. He advertised in the Birmingham *Gazette*, Oct. 10th, 1814, respectfully informing his friends and the public of the invention of his reaper, and that in his theatrical profession the farce of "Fortune's Frolic" would be played, in which the part of Robin Roughhead would be played by himself, in which he would work his machine in character, in an artificial field of wheat, planted as near as possible in the manner it grew. What became of Dobbs afterwards, we have not been able to learn. "Alas! poor Yorick."

The next reaping machine of British invention was produced by Mr. Scott, of Ormiston, in 1815, and described in Vol. 17, page 325, of the Edinburgh *Encyclopædia*, extracts of which we give with illustrations.

Fig. 17.

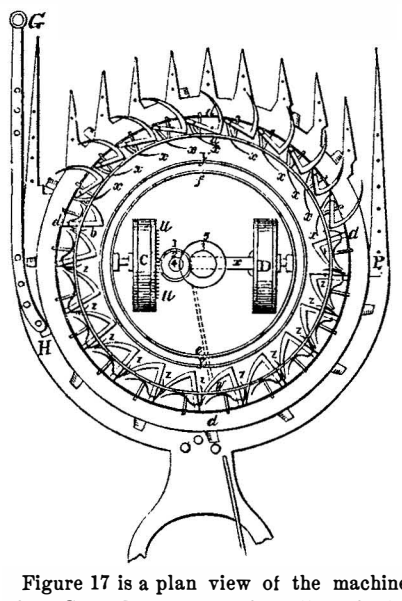
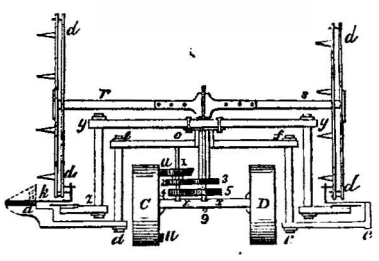


Figure 17 is a plan view of the machine, where C and D represent the roller wheels; *u u* the ring bevel wheel that is fixed to the inside of the roller, C; the circles, 1 2 3 4 and 5, represent the wheel-work, as shown in the section, figure 18; *e f* is the upper ring that is supported by the under frame part; *y y* is the ring that carries the cutter circle; *t u v w* is a deep ring of hoop iron that serves to work the collector hooks out and in, through holes cut for each one in the thin plate iron drum, *d d d d*. Each collector axis has two tails, one hinged and the other fixed; the ring, *t u v w*, has two long slits, the one from *v* to *t* by *u*, which the tails, *x*, pass through; the other from *v* to *t*, by *w*, through which the tails, *z*, pass when moving round that part of the ring. When the tails, *z*, &c., pass through their slit in the hoop, the tails, *z*, &c., travel in a groove by which the hooks of the collectors are thrown out, so as to gather the cut grain; and when the tails, *z*, &c., travel in their groove, the hooks are thrown in, allowing the cut grain to fall to the left hand in a continuous swath. The prong, P, extending to the same hight as the drum, is for the purpose of dividing the standing grain; G H is the draught bar by which the machine is drawn on the stubble side of the field.

Figure 18 is a section of the whole machine, where *a b c c*, represents the under frame parts; *e f* is the frame ring; *e b* and *f c* two pillars which connect this ring with the under frame part; into these two pillars is fixed the strong axis, *x*; C and D are two roller wheels, on which the machine moves; *z z* is the cutter ring; *z y* and *z y* are two pillars which connect the upper frame part of *y* to the cutter ring; *d d d d* is a drum, made of thin plate iron, supported by six arms, two of which only, *r* and *s*, appear in the section, each arm carries six collectors. On the inside of the roller wheel, C, is fixed a ring bevel wheel, *u u*, which turns the bevel wheel, 1; on the same axis are two wheels fixed on a hollow axis, the uppermost of which marked 2, acts upon the wheel, 3, and the smaller wheel, 4, turns the wheel, 5. On the top of the axis of the wheel, 5, are fixed the arms that carry the drum. On the top of the hollow axis of the wheel, 3, is fixed a flange that is firmly bolted to the upper part of the frame of the cutter ring. The lower end of the axis of the wheels, 3 and 5, plays in a bushed socket in the great axis, and can be adjusted by the screw, 9. The wheels 1 and 2 can be brought into contact, or disengaged at pleasure, by placing the lever, L, figure 17, at *m* or *n*.

Fig. 18.



One of the front prongs is shown in figure 18, at *k*, placed at a proper angle for pressing the root end of the grain to the collectors.

The cutters of this machine, it will be seen, have the serrated edge of the sickle, and though placed upon a circle, are arranged with a view to cut at an angle of 45° with the revolving circle, consequently the prongs against which they cut, vary in shape.

The draught is aided by the left hand roller wheel, nearest the horse, working all the machinery. This ingenious machine is reported to have worked well only for a short distance, under the most favorable circumstances; more, as it appeared, from the great defects in the strength of the frame work, than any errors in the principles of its construction.

Coal in the Arctic Regions.

The London *Times* of Sept. 14th, publishes a letter of Capt. Inglefield, of H. B. M. steamer Phœnix, to the Admiralty, dated Four Island Point, July 9, 1854, in which he gives an account of his visit to the remarkable coal deposits on the Island of Disco, in the Arctic region. The coal is of the anthracite species, excellent for steaming purposes, and exists in unlimited quantities. The captain gives the following account of what he saw at Atanekerdluk, on his way to Disco.

"Shortly after anchoring I landed with a party of officers from both vessels for the purpose of visiting a petrified forest, reported by the Esquimaux, but which had never been previously visited by any European, excepting Mr. Rink.

Here, at a measured elevation of 1084 feet, above the level of the sea, we found extensive remains of petrified trees, though nearly entirely embedded in sandstone clay. The specimens collected were in all stages of petrification, some charred into coal. That this has been a forest of considerable extent, and that the species of tree was doubtless what now only exists in a far more temperate climate, is beautifully illustrated by the widely-scattered specimens found of petrified leaves, identifying the lime, beech, fir, and some sorts of ferns. To the geologist this cannot fail to be a source of the greatest interest, and must be viewed by all as matter for great speculation.

Substitute for Coal.

A cheap substitute for coal may be prepared as follows. One third clay, one third chopped straw, one third coal dust, mixed together to a proper consistency, made into blocks, or similar to bricks when dried in the sun, or other heat, it will become hard and suitable for burning in stoves, ovens, &c.—

LITERARY NOTICES.

Dictionary of Technical Terms In French, English, and German—This is the title of one of the most useful works ever published. Its authors are the Bros. Tolhausen, and M. Gardissal, of Paris. It presents all the terms used in science and art in the French, English, and German languages, and it has tables of moneys and measures reduced to French, English, and German standards. The terms are first given in French, then English and German. It is the first of three works of the same nature, differently arranged. The next volume will have the English term first, then the German and French; and the third volume will commence with the terms in German. It is such a work as we have desired for a long time to see; its authors deserve great credit for the care and ability they have displayed in getting it up. Price $1,31. For sale at this office.

Guide to the Capitol of the United States—This is the title of a useful work by Robert Mills, Engineer and Architect, whose experience and knowledge of Washington City, and all the things of note in it, is a guarantee for the correctness and completeness of his production. It is a very useful hand book for persons visiting Washington.

The New York Dutchman in reply to our notice of its *thiering* propensities, accuses *us* of hooking articles—one from the London *Times*, on "Bank of England Notes." See Scientific American No. 4, page 30, down in the corner, scarcely discernable to the naked eye, but the most amusing part of its retort upon us, is that of *hooking* two-thirds of an article from another paper, when in truth it was a bantling of our own, and the paper referred to *hooked* it from the Scientific American, and being a daily paper it rather got the best of us in circulation. The *Dutchman* is entirely welcome to its laurels, we do not covet them this time.

The *Dutchman* is withal one of the most readable and pleasant family paper published in the city. Price $2 per annum.

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